

Southern Power & Industry

The Industrial and Power Journal of the South and West

JULY, 1958

NEW LOOK

in
plant construction



PALLETIZATION

and
three-stage cycle



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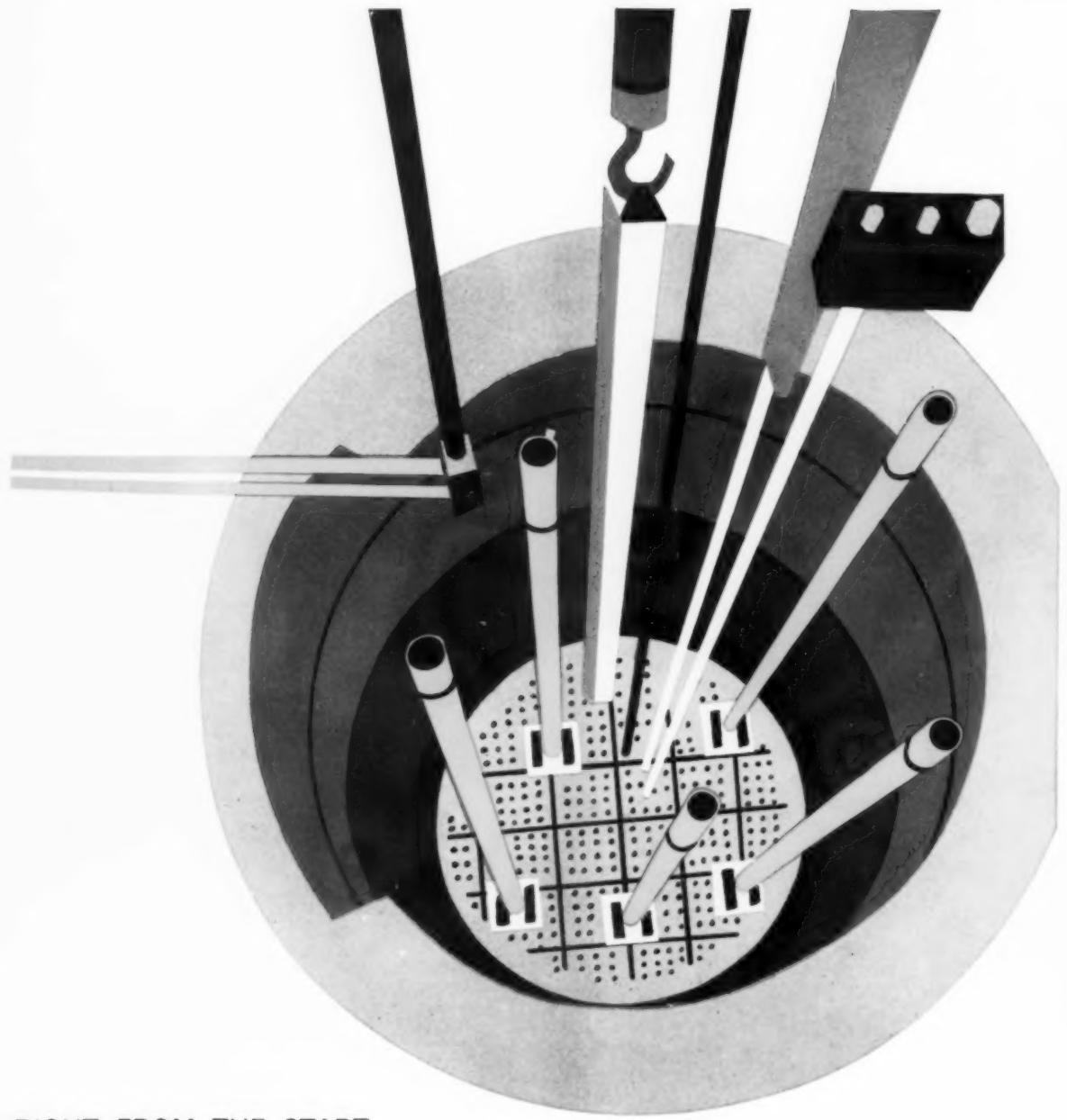
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SOUTHERN POWER & INDUSTRY for JULY, 1958



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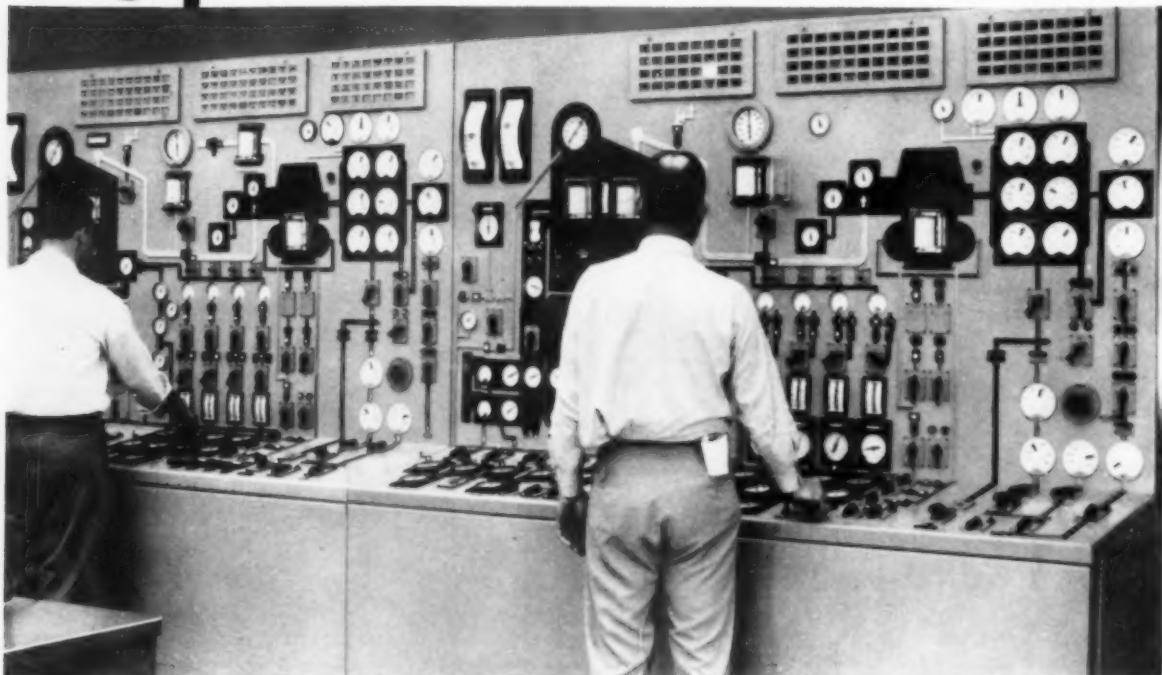
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For more information, use Reply Card—Page 81



How Copes-Vulcan control systems boost power plant efficiency



Copes-Vulcan puts combustion control at operator's finger tips

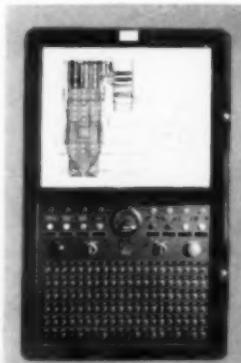
Equipped with easy-to-read recorders and control stations, this compact Copes-Vulcan panel centralizes operator control and simplifies boiler operation. This modern system features circuit simplicity with independent control loops on air flow, fuel loading and furnace draft. Drive units assure accurate positioning and fast response, and eliminate the need for interconnecting control loops.

A custom installation . . . a continuing service

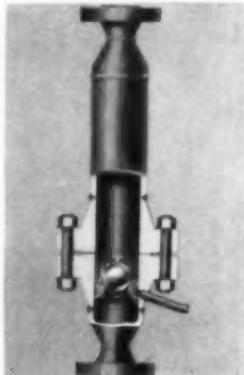
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Whether furnished in individual units or integrated into a single system, each installation is tailored to meet specific requirements of generating capacity, load range and fuel. Copes-Vulcan supplies skilled service, when needed, for the life of the installation.

Write for Bulletin 1032 showing a Copes-Vulcan control system working at a showcase generating plant.



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Desuperheater improves temperature control. New Variable-Orifice Desuperheater® holds reduced steam temperature constant only 20' downstream from desuperheater outlet, even over a 50-to-1 load range. Write for Bulletin 1037. *Patent applied for

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Southern Power & Industry

The Industrial and Power Journal of the South and Southwest

Eugene W. O'Brien
Managing Director

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JULY, 1958

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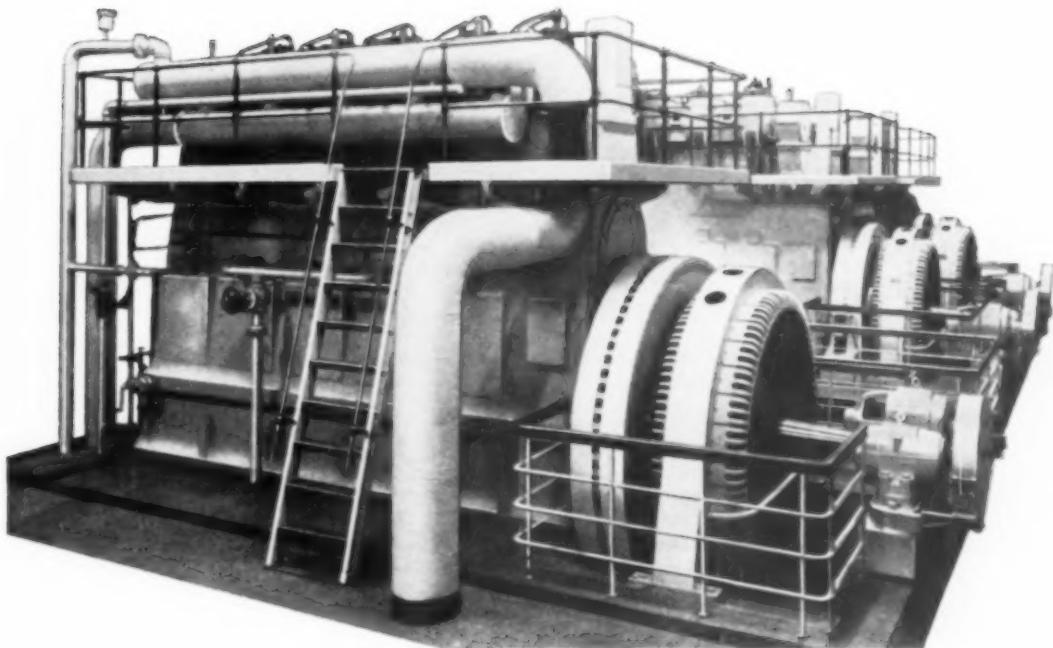
Facts and Trends

July 1, 1958

- ◆ BIG OPPORTUNITY--Even though the South has not experienced the business drop of other areas, plant managers and plant engineering personnel are taking a mighty good look at MATERIAL HANDLING EQUIPMENT to increase further output and profit. New plants are being designed to offset, as far as possible, high labor costs, and old plants are being improved to reduce production labor. This means automation, and automation means automatic handling and movement of materials.
- ◆ PLANT-TESTED material handling installations are highlighted on pages 33 to 48. SPI's 16-page color section shows how specific Southern & Southwestern plants have conserved manpower, increased production, and boosted profits with modern material handling equipment.
- ◆ PALLETIZATION and a three-stage handling cycle have cut plant construction costs at Union Carbide Chemicals Company's Institute, West Virginia plant. Company adapted a technique used successfully by building supply dealers and added a few innovations of its own. Pages 33-35 show how equipment is unloaded, stored and delivered to the construction site. Palletization did the job.
- ◆ AN INTERLOCKED CRANE SYSTEM at Atlanta's Southern GF Company features monorail crane equipment, which transfers material, not only from end to end of the plant but from side to side. Floor space and storage area remain the same but can be put to better use. Details are on page 42.
- ◆ SAFETY, with special emphasis on the prevention of back injuries, is the keynote at Oklahoma Gas and Electric's Woodward Station. Device, illustrated on page 43, has been found to help materially in lifting a barrel from a horizontal to a vertical position, either by manpower or mechanical lift.
- ◆ HAZARDOUS LOADING--Combination of corrosive fumes from hydrochloric acid vapors and aluminum chloride, which is used as a catalyst in the production of ethylbenzene, created a difficult handling problem at the Port Arthur, Texas plant of Koppers Company, Inc. An electric truck, fitted with special anti-kick-back drum handling device, turned a disagreeable job for two men into an easy job for one man. Details are on page 46. Equipment is in a Class I Group D explosion hazardous area and working space is very limited.
- ◆ NEW LIGHTING SYSTEM at Mosher Steel Company in Houston cut maintenance and gives better light at lower cost. Sealed hi-bay mercury vapor Wide-Lite fixtures did the job. From-the-plant case study is reported on pages 50-51.
- ◆ NICKEL-COPPER WIRE NETTING, extensively used for main steam lines, high temperature duct work, and boiler insulation in International Paper's Mobile plant, has headed off difficult maintenance problems. Installational data is on page 68. Plant is located in a corrosive industrial and salt water atmosphere and

(Continued on Page 6)

STOP Carbon Sludge Varnish



There's good reason why Sinclair RUBILENE® Oil has a great record in industrial Diesel applications. RUBILENE prevents the formation of carbon, sludge and varnish in Diesels. It stands up under highest operating temperatures, provides better lubrication protection to cylinders, pistons, rings and other vital moving parts. It cuts oil consumption, reduces service time to a minimum.

Now's the time to switch to Sinclair RUBILENE. Whatever the make or age of your Diesel, whatever your lubrication problem, there's a RUBILENE or RUBILENE HD Oil that precisely meets your requirements. Call your Sinclair Representative for further information or write for free literature to Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. *There's no obligation.*

SINCLAIR RUBILENE OILS

Facts and Trends (Continued)

specific corrosion problems center around fumes generated by the paper process.

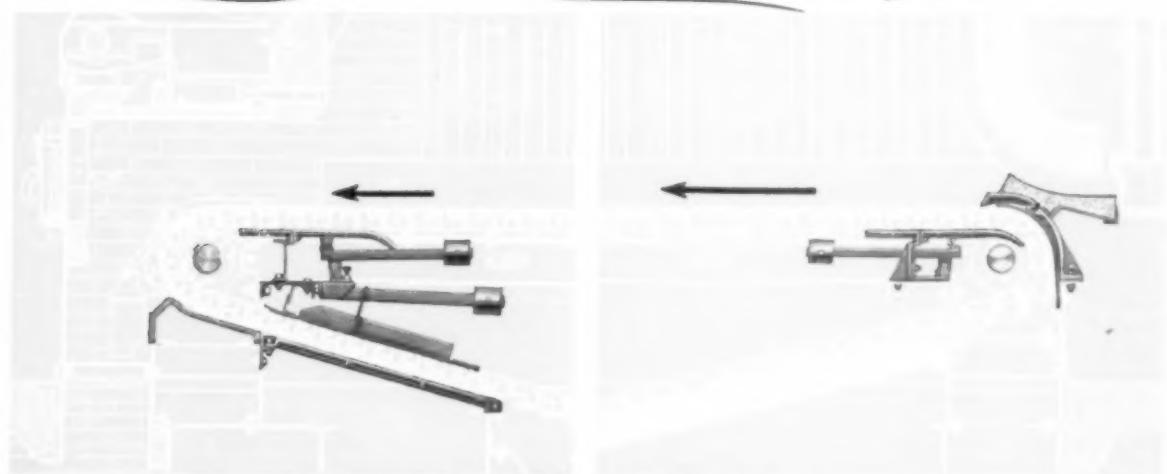
- ◆ GOT CARRYOVER TROUBLES? Pounding the desk won't help. Look for contaminants and maintenance errors and use the services of a competent boiler feedwater chemist. Pages 54-56 should help you find the cause and develop effective control.
- ◆ HIGH TEMPERATURE piping problems confronted design engineers at the new Firestone Orange, Texas plant, which produces 40,000 tons per year of butadiene from butane. Expansion joints had to withstand temperatures as high as 1100 F. They had to compensate for complex movements. Hydrocarbon lines vary in diameter from 30-in. to 48-in. Air lines are 54-in. and 72-in. For expansion joint data see page 62.
- ◆ STARTING A TRAINING PROGRAM? Are you going to hire a teacher or would a correspondence course be better? Are you going to run the classes on company time or will the men attend on their time, say after hours? How will the union feel about this? Should the employees pay part of the cost? For constructive comments check MANAGEMENT CLINIC on page 28.
- ◆ PAINTS AND COATINGS--Because of "open type" construction, the majority of process and utility plants in the South-Southwest are subjected to corrosive atmosphere. Paints and protective coatings must offer superior protection from the heat, high humidity, salt air and chemical fumes.

To help Southern & Southwestern plant engineering personnel to get the right material for the job, get it properly applied at a reasonable cost for each year of service and protection, SPI will soon publish a 16-page manual based largely on the INDUSTRIAL PAINT SYSTEMS PROCEDURE employed by the Southwestern Public Service Company.

Manual will cover selection factors; surface preparation; surface pretreatments; primers, finish coats, special paints and materials, maintenance and repainting, and standard systems employed at Southwestern.

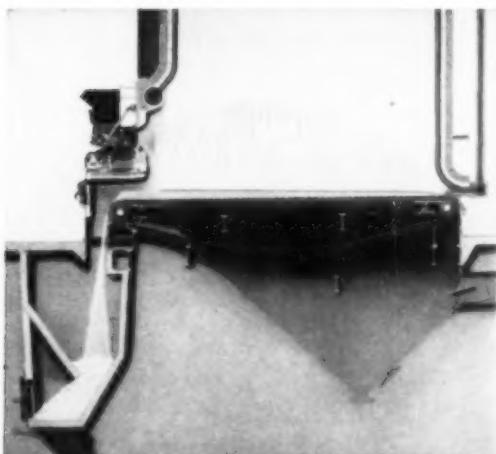
- ◆ EQUIPMENT LEASING — Operating plants with leased equipment will become increasingly important in industries whose ratio of fixed assets to tangible net worth is greater than 30%. It frees working capital for expansion of sales, expanding research, etc. A manufacturer does not have to freeze his own capital in equipment and he does not have to worry about equipment becoming obsolete. At the end of a short term lease a company can always secure the newest piece of equipment on another lease. Typical lease is from 3 to 5 years.
- ◆ METAL GRATING — If you specify, buy, or use metal grating and treads, a new technical guide, prepared with the cooperation of eight leading manufacturers, features tables, standards, specifications and glossary of terms used in the industry. "Metal Grating Handbook" is available at \$1 per copy from Metal Grating Institute, Inc., One Gateway Center, Pittsburgh 22, Pa.
- ◆ INDUSTRIAL EXPANSION BRIEFS — Pages 8-26 give evidence of the continued growth of industry in the South-Southwest--new \$1 million printing plant in Atlanta for Foote & Davies . . . Bestwall Gypsum Company starting construction on new multi-million, 250-employee gypsum board, lath and plaster plant at Brunswick, Georgia . . . management and operating engineers named for Goodyear Plastics' \$9 million plant in West Virginia, Carling's multi-million Atlanta brewery, and Du Pont's Carolina silicon plant. Check pages 8-28 for details and other recent and proposed additions to Southern industry.

DOWN WITH EXCESS AIR!



Floating Front and Rear Grate Seals—A Detroit RotoGrate Exclusive.
They decrease excess air.

Automatic Air Seals Exclusive With Detroit RotoGrate Stokers Reduce Excess Air to 22% and Lower



Detroit RotoGrate Stoker — an advanced design spreader stoker with forward moving grates, for medium and large boilers. Burns all ranks of bituminous coals and lignites without special preparation . . . also many waste or refuse fuels, either alone or in combination with coal. Efficiency is high — maintenance low.

Many users reduce excess air to 22% or under, due to these free floating automatic front and rear seals with adjustable counterweights. They really seal, and stay sealed even after years of service. Air is directed to the active combustion zone. The result is increased combustion efficiency and economy.

The rear under-grate seal plate provides a quiet coking section which extends across the furnace . . . expedites the ignition of green fuel.

These and many other exclusive features of advanced design make Detroit Stokers your best buy. There is a type and size Detroit Stoker for any boiler capacity from 3,000 to 400,000 pounds steam per hour.

DETROIT STOKERS COST LESS: COST = INITIAL INVESTMENT + UPKEEP + PRODUCTION LOSSES DUE TO EQUIPMENT OUTAGE. THE TOTAL IS LESS WITH DETROIT.

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NEWS

for the South & Southwest

\$8 Million Kaiser Caustic Soda Plant in Full Production at Gramercy, La.

Producing 114 tons of caustic soda and 100 tons of chlorine a day, Kaiser Aluminum & Chemical Corporation's new \$8 million plant at **Gramercy, Louisiana** is the first chemical processing plant in the country to supply caustic soda (major raw material used by the aluminum industry to refine bauxite into alumina) to an adjoining alumina works. Latter plant is still under construction.

Production at Gramercy also is sufficient to supply a substantial portion of the requirements for caustic at Kaiser Aluminum's Baton Rouge, La., alumina plant and the Chalmette, La., reduction works where it is used to make synthetic cryolite.

An outstanding feature of the plant is its extensive system of

instrumentation, permitting a high degree of automatic control over all phases of the production operation. Innovations which increase plant efficiency and economy also have been incorporated in materials handling, processing procedure and in the layout of various units of equipment.

In addition, the facilities are ideally located for both deep water and rail transportation of materials. The plant's 3100-acre site has frontage on the Mississippi River and is serviced by the main lines of the Illinois Central and the Louisiana and Arkansas railroads.

Caustic and chlorine are produced by electrolysis of salt brine and the plant's principal processing facilities consist of 112 Hooker S-3B diaphragm cells rated at 30,000 amp.

These cells are designed to operate at a high level of efficiency with low voltage. Other facilities provide for brine treatment; cooling, drying and liquefaction of chlorine and the concentration of caustic soda.

Special provisions have been made in the processing system to simplify maintenance. Enough surge capacity is provided at each step of the process to cut out units of equipment for short periods without affecting production capacity.

All electricity and steam is provided by the plant's own power station. The station has two 15,625 kw turbines with 17,647 kva generators operated by steam from three boilers which can supply 960,000 lb/hr. This will meet all of the power and steam requirements of both the caustic-chlorine plant and the adjoining alumina plant. The plant also has its own water and sewage treatment facilities.

All plant production units and related servicing facilities have been laid out to permit future expansion.

Engineers Named for Goodyear Plastics — W. Va.

Construction work has begun on **Goodyear Tire & Rubber Company's** new \$9 million polyester film plant at **Apple Grove, West Virginia**. Catalytic Construction Company of Philadelphia has the general contract.

The Pt. Pleasant Plant will produce Goodyear's new polyester film — Videne — developed for direct or stretch laminating applications in the textile, metal, wood, paper, plastic, automotive and packaging fields. Volume production is scheduled for early 1959.

Oka Carlson, named Plant Manager, will have headquarters in



Oka Carlson, D. E. Lintala and J. W. Coonen have key staff assignments at Goodyear's new \$9 million film plant under construction at Apple Grove, W. Va.

Akron until the new unit goes into production. Formerly superintendent of cascade (production) operations at Goodyear Atomic Corporation in Portsmouth, Ohio, Carlson has been with Goodyear since 1941.

Other appointments in conjunction with the new West Virginia unit include **D. E. Lintala** as Technical Superintendent and **J. W. Coonen** as Plant Engineer.

Mr. Lintala has been associated

TWO KEELER DK PACKAGE STEAM GENERATORS provide

STEAM

for HEAT, HOT WATER and
AIR CONDITIONING

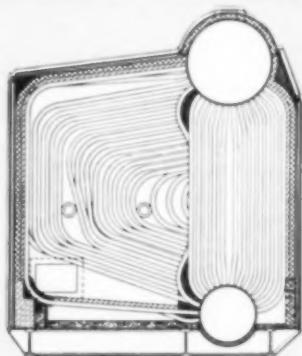


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R. P. Farnsworth & Co., Inc.
New Orleans, La.

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C. Wallace Plumbing Co., Inc.
Dallas, Texas



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- Design pressures: 200 to 500 psi.
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- Tube-to-tube construction on both sides provides greater percentage of radiant heating surface.

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The Seal of Quality in Water Tube
Steam Generators

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— OFFICES IN PRINCIPAL CITIES —



KEELER
WATER TUBE
Boilers

Why You Get HIGHER EFFICIENCY in a **RILEY** **TURBO** **FURNACE**

The Riley Turbo Furnace, a new concept in furnace design, has created unusual interest in the power industry. Already, in only a few short years since its introduction, twenty-three Turbo Furnace units with a total steam capacity of 14,000,000 lbs/hr have been bought by public utilities and industrial companies. Sizes range from 125,000 lbs/hr to reheat units of 1,650,000 lbs/hr and are being installed for the most part as multifuel units to burn oil, gas and coal. Three units are already successfully burning the newest of petroleum by-products fuels: Fluid Coke.

One of the most attractive features of the Turbo Furnace is its high furnace efficiency. Firing of fuels at the bottom of the circulation system makes possible full utilization of furnace waterwall surfaces from top to bottom and permits higher heat release per square foot of furnace envelope. Vertical displacement of furnace gases results in clean, slag-free furnace surfaces and a uniform distribution of furnace heat across the entire width and depth of the furnace.

A survey of your plant by a qualified consulting engineer could show ways of making surprising savings in your power costs.

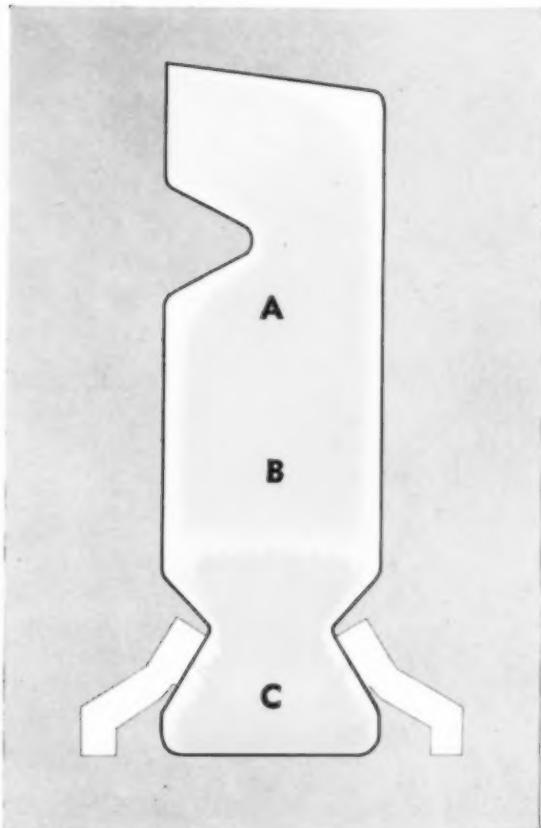


Fig. 1. Flame and Furnace Gas Characteristics of the Riley TURBO FURNACE

High Furnace Turbulence High Burn Out Rate

As can be seen in the furnace cross section, Figure 1, air and fuels enter the combustion zone of the Turbo Furnace in a downward linear direction from Riley Intertube Directional Flame Burners arranged for opposed firing across the width of the furnace. The opposed streams of fuel and air intermix in the center of the furnace (over the slag pool when pulverized coal is burned) to produce a highly turbulent area of combustion which fills all the area below the furnace throat. Long residence time of fuels in the area results in a negligible loss of combustibles.



RILEY

STEAM GENERATING & FUEL BURNING EQUIPMENT

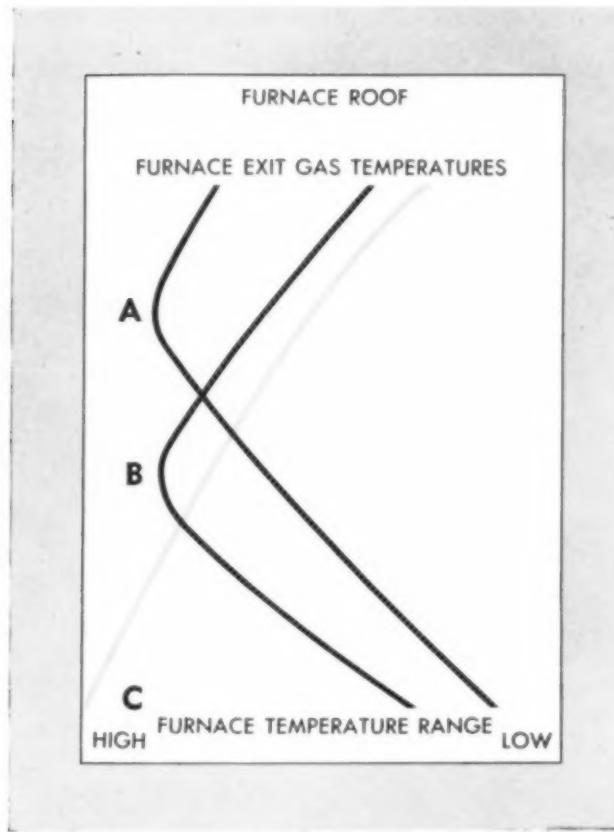


Fig. 2. Furnace temperature curves resulting from heat concentration at various furnace levels. (A) Above center of furnace (B) below center of furnace (C) bottom of furnace

Clean Furnace Walls — No Slagging

Since combustion takes place almost entirely within the furnace bottom very little flame ascends into the upper portion of the furnace. Gases rise vertically without impinging on furnace walls. Heat is released as gases travel toward the furnace exit, cooling to the point where danger of slagging of high temperature elements is reduced to a minimum.

Uniform Heat Distribution At Furnace Exit

A desirable characteristic of furnace performance particularly in larger boilers with wide furnaces is the even distribution of heat across high steam temperature components. In wide Turbo Furnaces this uniformity is furthered by the use of radiant tube platens.

A Riley engineer will gladly give you complete information about this latest Riley development. Write — RILEY STOKER CORPORATION, WORCESTER, MASSACHUSETTS

Uniform Furnace Exit Temperatures With Multiple Fuels

The similar flame characteristics of oil, gas or pulverized coal, the completion of combustion in the confines of the furnace bottom, the cooling effects produced by the full utilization of furnace waterwall surfaces result in (1) uniform furnace exit gas temperatures with a given heat release per square foot of effective radiant surface and (2) a marked similarity in the exit temperature of the three fuels (Figure 3). These characteristics make possible the arbitrary use of gas, oil or a wide range of coals with a minimum amount of steam temperature control.

All Burners at Operating Floor Level

Another feature of the Turbo Furnace about which operating engineers are enthusiastic is the fact that all burners, with their supervision and maintenance, are located on one level. This feature permits the location of firing control on the turbine level.

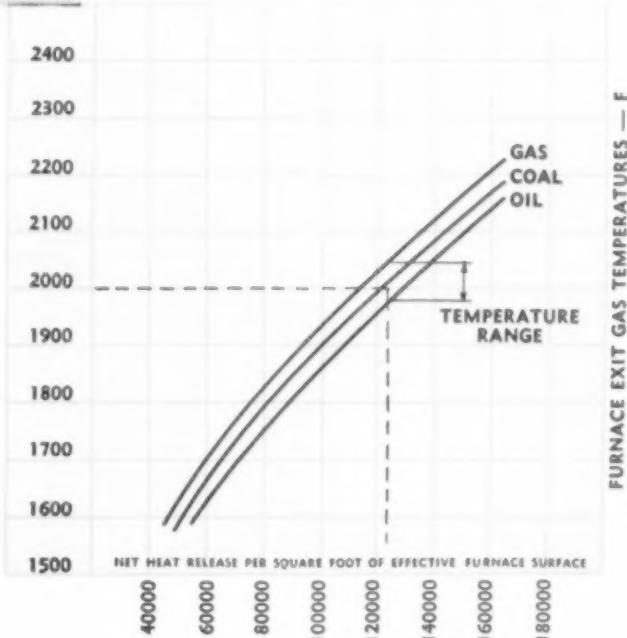


Fig. 3. TURBO FURNACE exit gas temperatures of gas, oil, coal have a maximum variation of approximately 50 F

News of the South-Southwest — more power . . . more plants . . . more money

with the Goodyear organization since 1942 and has had several chemical engineering assignments. Mr. Coonen joined Goodyear's engineering department in 1951.

The five-story, 100,000 sq ft Apple Grove plant will employ around 200, producing Videne for direct or stretch-laminating applications in the textile, metal, paper, automotive and packaging fields and as a special wrap for food packaging.

Photo shows possible end use applications for Videne, the new polyester laminating film — (1) dry laminated to printed wall paper; (2) dry laminated to foil for packaging applications; (3) dry laminated to paper for packaging applications; (4) laminated with adhesive to vinyl for wall coverings; (5) laminated to steel panels for exterior and interior construction; (6) laminated to aluminum panels; (7) laminated to spun glass place mats; (8) as wrap for fresh meats and poultry; (9) laminated to aluminum and vacuum



formed into serving tray; (10) laminated with adhesive to polystyrene and vacuum formed in tray; (11) and (12) show sample rolls of satin and

clear finish Videne A; and (13) is printed Videne A laminated with adhesive to polystyrene and vacuum formed into a medicine cabinet.

Westinghouse Repair Plant Completed — Mo.; New Louisiana Distribution Center Planned

Serving industry in Missouri, Kansas and Oklahoma, a new 22,000 sq ft **Westinghouse** manufacturing and repair plant has been placed in operation in **Kansas City, Mo.** It is equipped to repair all sizes of electrical equipment — power transformers, generators, motors and controls, plus the manufacture or modification of specialized equipment. **J. R. Brooks** is Manager of the new ultra-modern facility.

The installation consists of two main areas, a high-bay and a low-bay section. The high-bay section is designed for a lifting capacity of 100 tons. A 50-ton bridge crane is presently in use; another will be added later.

New equipment installed in the plant includes an oven used for baking and drying heavy electrical equipment. It is 13 ft high, 10 ft wide and 16 ft long. A high potential testing transformer is also available that can test transformers rated up to 250,000 volts.

Another feature is a de-tanking transformer pit 15 ft deep, 15 ft

wide and 30 ft long.

New Orleans — With completion scheduled for September, construction is underway on a new Westinghouse product distribution center which will consolidate Westinghouse sales offices in the New Orleans area which handle X-ray equipment, air handling and air cleaning equipment, elevators, and packaged air conditioners.

Westinghouse Electric Supply Company will continue to maintain separate headquarters and facilities.

Initially, the distribution center will be responsible for consumer product distribution for metropolitan New Orleans and the greater part of Louisiana, as well as a large area of southwestern Mississippi. Electrical apparatus warehouse storage for use by utilities, industrial companies and other customers will eventually be added to the consumer lines.

McDonough Construction Company is the general contractor and **C. W. Mackie Company**, the Mechanical contractor.

CP&L Starts New 250,000 hp Station

Preliminary clearing and excavating work is underway at the site of **Carolina Power & Light Company's** 250,000 hp generating plant near **Hartsville, N. C.** T. N. Creacy, engineer with Ebasco Services, Inc., will direct construction work. Completion target date is 1960.

Vinyl Chloride From Louisiana

At Baton Rouge, Louisiana, **Ethyl Corporation's** vinyl chloride monomer plant is now in full production under the direction of **Dr. Frank Padgett**. Facility is located in Ethyl Corporation's Baton Rouge manufacturing center, the world's largest plant for the manufacture of gasoline antiknock compounds. Polyvinyl chloride, the plastic made from vinyl chloride monomer, is widely used for the manufacture of upholstery materials, pipe, electric wire and cable insulation, floor coverings, etc.



Don't wait for production to stagger under impossible maintenance

POWER-UP

to provide adequate voltage for economical machine operation

Is low voltage building up your maintenance costs? Burning out equipment? Costing production time? . . . Then you need to start a program of electrical modernization . . . 65% of all plants do . . . Westinghouse can help you today . . . with a POWER-UP program.

J-96118

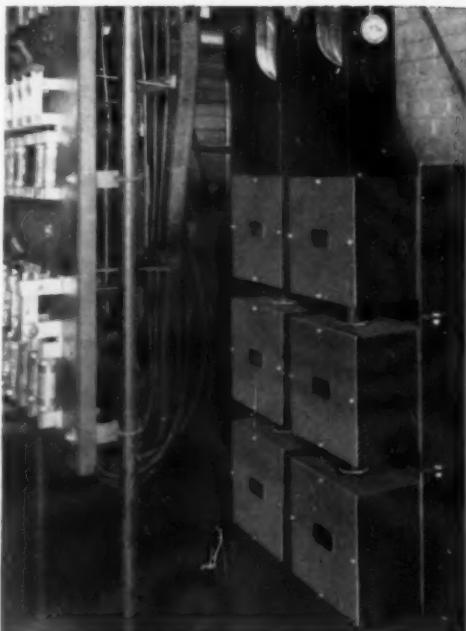


YOU CAN BE SURE...IF IT'S Westinghouse

WESTINGHOUSE POWER CENTERS located near the load are the key to adequate voltage. Dry-type self-contained power centers eliminate fire hazard, are 20 to 40% lighter than liquid-filled — suitable for floor or balcony mounting. Location close to load shortens secondaries, reduces line loss. Quiet operating, gets more work from motors.



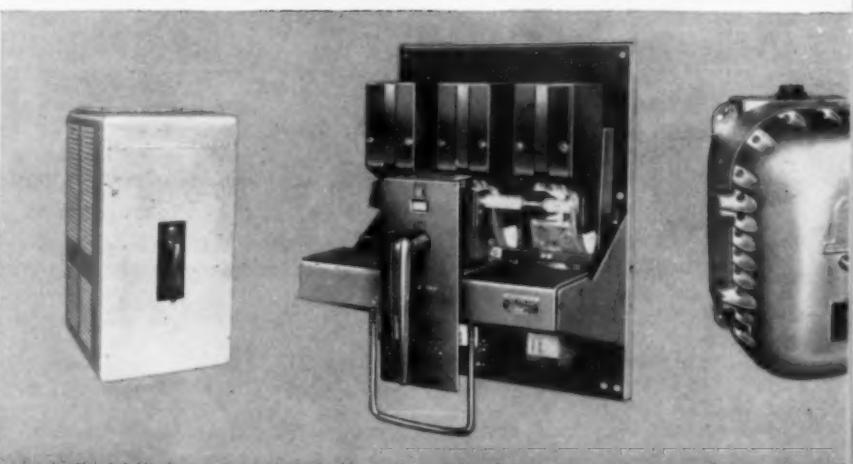
WESTINGHOUSE INTERTEEN® CAPACITORS can effectively increase your system capacity by supplying the non-productive reactive current needed in your system — reducing line current — raising voltage — improving power factor and thus reducing your power costs by giving you more productive power for the same money.



WESTINGHOUSE AMP-GARD® HIGH-VOLTAGE STARTERS provide 250,000 kva interrupting capacity — the short circuit protection necessary in a modern electrical system. This performance has been verified through tests in the Westinghouse High Power Laboratory. Complete packaged construction results in quick and easy installation and maintenance.



WESTINGHOUSE DB DE-ION® CIRCUIT BREAKERS give complete protection of low-voltage a-c or d-c power distribution systems. The basic DB breaker and all components are mounted on an all-metal mounting base to form a single compact unit. Available in all NEMA standard enclosures for any industrial application.



*Trade-Mark

Here's how a

POWER-UP

program

provides

for

economical

production

Varying voltage can cause most of your maintenance problems, shorten machine life and make economical production impossible.

That's why it is more important than ever that you call on Westinghouse now for *Power-Up* planning assistance. Engineers experienced in your industry will help you plan a program to maintain adequate voltage with Westinghouse work-together equipment.

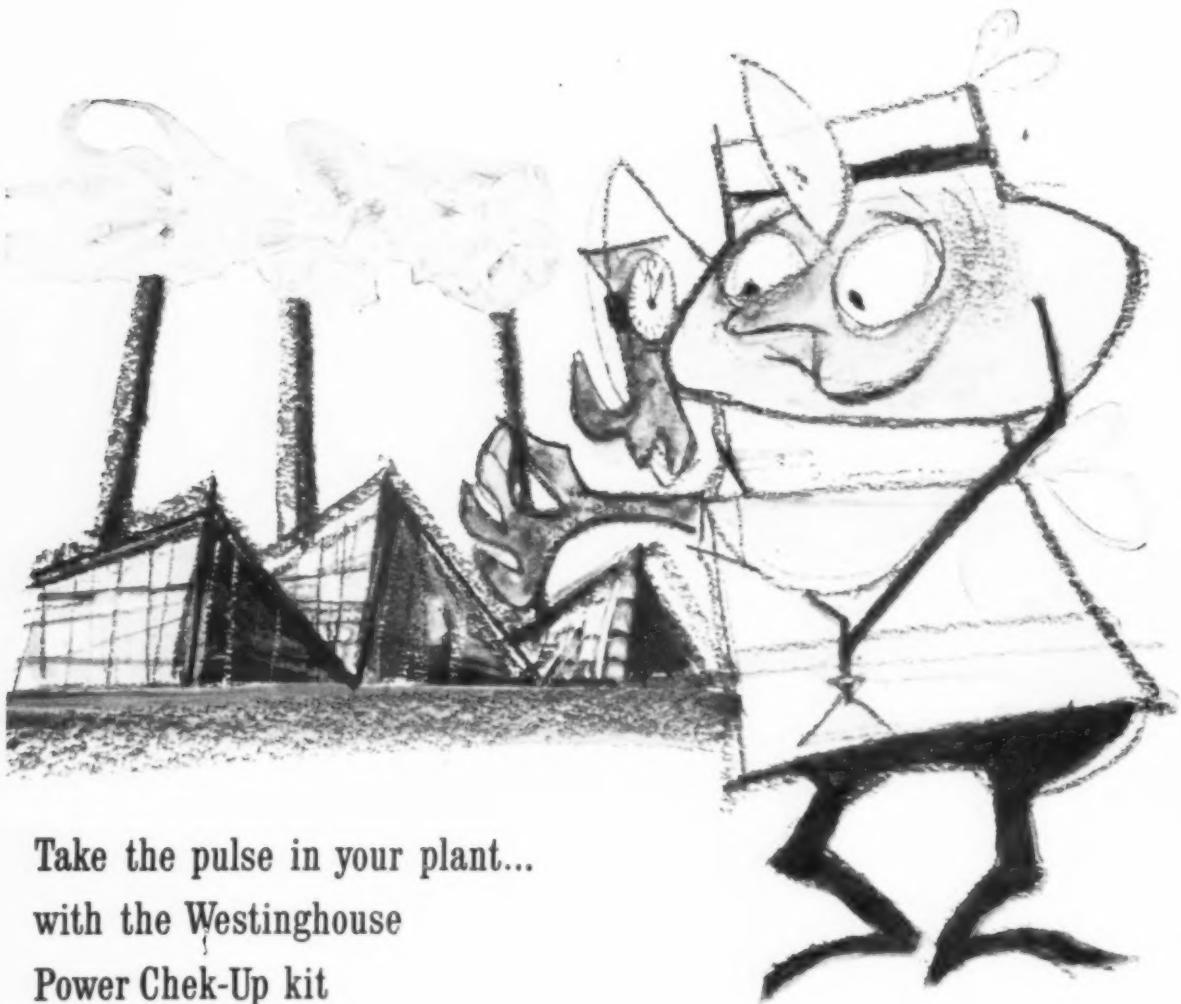
A modern Westinghouse electrical distribution system brings new advantages in provisions for load growth and convenient layout. There's profit in planned power. Call your Westinghouse salesman. Or, write Westinghouse Electric Corporation, 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pennsylvania.

J-96104

YOU CAN BE SURE...IF IT'S

Westinghouse





Take the pulse in your plant...
with the Westinghouse
Power Chek-Up kit

Production problems because of low voltage? Interrupted service? Maintenance costs too high? . . . Then your plant needs an electrical check-up . . . 65% of all plants do! It's easy to see where electrical inadequacy is costing you money when you use the new Westinghouse Power Chek-Up Kit.

The necessary forms, an easy-to-work slide rule and an instruction book are all included. Ask your utility or Westinghouse salesman for details on how to get a kit.

J-96120



YOU CAN BE SURE...IF IT'S Westinghouse



News of the South-Southwest — more power . . . more plants . . . more money



NEW MULTI-MILLION GYPSUM PLANT FOR BRUNSWICK, GA.

With completion scheduled for late '59, **Bestwall Gypsum Company** started construction last month on a new multi-million, 250-employee gypsum board, lath and plaster plant at Brunswick, Georgia. **Harold Zelms**, presently plant manager of Bestwall's Acme, Texas plant, will administer the construction program at Brunswick, and will take over management of the plant upon completion. Capacity will be about 300 million sq ft of gypsum board and lath products a year.

Extrusion Plant for Mississippi

A \$300,000, 23,000 sq ft, 75-employee impact metal extrusion plant is being constructed in New Albany, Mississippi by **National Impacted Metal Corp.**, a subsidiary of the First Mississippi Corporation. **S. A. Clow** and **H. W. Smallery**, formerly with P. R. Mallory, Inc., of Memphis, Tenn., head up the new operation.

Missouri Plant for Dayton Rubber

The **Dayton Rubber Company** has an option on a 62-acre site in **Springfield, Missouri**, where it plans to construct a 175,000 sq ft mechanical rubber goods manufacturing plant. With headquarters in Dayton, Ohio, the Company has several manufacturing plants, including Waynesville, N. C.

Dayton Rubber was primarily a tire manufacturer until the firm embarked on a product diversification program in 1920 and the firm's growing mechanical goods line, along with new developments in the foam, plastics and chemicals fields, make it an important supplier to virtually every segment of industry.

Solvay Expanding Baltimore Plant

A major modernization and improved materials handling equipment project is underway at the **Baltimore Mutual Chromium Chemicals** plant of Solvay Process Division, Allied Chemical. According to Mr. I. H. Munro, Solvay Process president, the project will include alteration of an existing building to a modern warehouse facility for more efficient storage and handling of chromium products; construction of a new truck dock; and installation of new materials handling equipment.

Partially designed by Solvay Process Division engineers, the new materials handling equipment will result in rapid and uninterrupted product packaging. Completely automatic, the machines will remove covers from drums, fill each container with an exact weight of chemicals, and then replace the cover. Automatic weight check and labeling follow.

A modern ventilation system will be installed with the automatic packing equipment.

The new truck dock will facilitate deliveries of materials to and from the plant, resulting in savings of time to both the trucker and the Solvay plant.

\$500,000 Equipment Service Center — Ark.

December '58 is the scheduled completion date for the new one-half million dollar 46,400 sq ft office-service shop-warehouse of **J. A. Riggs Tractor Company** on a 15-acre tract near Little Rock, Arkansas. Considerable equipment will be installed to provide earthmoving equipment service. **Herman Carty** is General Contractor and **John Riggs, Jr.**, is President of the J. A. Riggs Tractor Company.

Service Terminal for McLean — W. Va.

October is the scheduled completion date for the new service terminal near Charleston, West Virginia, for **Service, Inc.**, McLean Trucking Company's subsidiary. Construction includes two-story building, with 3,240 sq ft on each floor; 11,780 sq ft warehouse; and 11,341 sq ft maintenance building. Latter will have 9 tractor-repair stalls and drive-through inspection, wash, lubrication lanes and a stockroom.

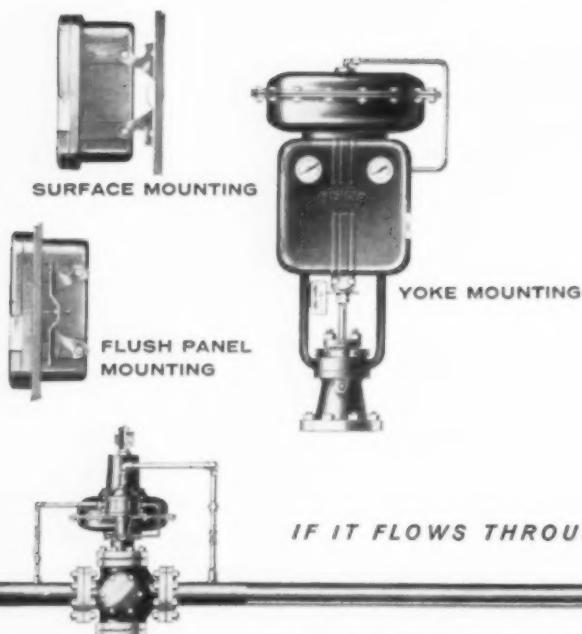
PLANT PERSONNEL

Walter H. Owen is now General Manufacturing Superintendent and **Earl L. Casey**, Manager of Division Services of **Texas Instruments Incorporated**, Apparatus Div. in Dallas, Texas. **W. F. Joyce** is TI Vice President in charge of the division, which designs and manufactures complex electronic and electromechanical apparatus and systems.

R. E. Persohn, Assistant General Manager since early '58, is now General Manager of **Allis-Chalmers' Gadsden, Alabama Works**. He succeeds **S. W. Ouweneel**, who recently became Assistant to the General Works Manager, Tractor Group in Milwaukee.

Dave Russell is now Production Control Manager of **Anderson Electric Company** in Birmingham, Ala.

Basic Simplicity...faster



PERFORMANCE DATA	
Test	Results
Air or Gas Consumption with 15 psi Output Pressure	Minimum at 10 or 0 Proportional Dial Setting—2 cfm Maximum at 5 Proportional Dial Setting—23 cfm
Resolution Sensitivity	Minimum Change Required in Measured Variable to Produce an Effective Movement of Final Control Element is 0.1% of Bourdon Tube Rating.
Repeatability	Ability of Wizard to Reproduce Its Output Signal for a Given Pressure Setting is 0.5% of Bourdon Tube Rating.
Resonant Frequency	Unaffected at Usual Motor and Turbine Speeds.
Temperature Effects	Under Cold Box Test at —20° and Simulated Sun Test from 80° to 212°F Control Pressure Remained Within ±1% of Bourdon Tube Rating.

FISHER GOVERNOR COMPANY

response... greater stability

the WIZARD II PRESSURE CONTROLLER with New and Improved Features

1

VOLUME RELAY for faster response to pressure changes.

2

RESET FEATURE for greater stability and pin point control,
assuring perfect metering, even on multi-stage meter runs.

3

WIDE RANGE brass, steel or stainless steel Bourdon tubes
cover a range of from 25 to 10,000 psi. Bellows assemblies
for low pressure regulation in ranges from 0 to 25 psi.

Again FISHER engineering produces features the industry needs to do a better job

The Wizard II has been designed to specifically meet the demands of modern, complex systems requiring closer control. The Wizard II retains all of the basic simplicity, accuracy and dependability of the Wizard 4100U, plus its own exclusive features.

The new design consists of two sub-assemblies encased in a weather proof die cast aluminum housing which is provided with a 1/4" pipe threaded vent for gas service. Either assembly can be removed without disturbing line connections.

The upper assembly consists of two gauges, relay and proportional band adjustment. The lower assembly includes the set point adjustment, proportional bellows, Bourdon tube and nozzle. Each assembly is assembled and calibrated before mounting in the case. The case can be mounted on a flush panel, a wall or on the yoke of the control valve. Careful and exhaustive tests have conclusively proved that the Wizard II measures up to rigid Fisher standards.

A completely descriptive and illustrated bulletin on the Wizard II is yours for the asking. Write for Bulletin No. D-4150.

The original Wizard I is still available for those applications not requiring volume relay and reset features.

CHANCES ARE IT'S CONTROLLED BY...

Marshalltown, Iowa / Woodstock, Ontario



News of the South-Southwest — more power . . . more plants . . . more money



Carling's Multi-Million Atlanta Brewery in Production

Formerly opened and dedicated in late June, **Carling Brewing Company's** new multi-million dollar Atlanta brewery is now producing Black Label Beer and Red Cap Ale to expanding markets in ten Southern states.

Situated on a 35-acre tract on the southern edge of Atlanta, the plant is composed of four major units — the brew house, storage and fermentation building, power house, and bottling and shipping building.

Brew house has five levels and contains about 31,000 sq ft. Storage and fermentation building has three levels,

no windows, and is completely refrigerated. Power house has two boiler units equipped for both gas and oil firing, each with a capacity of 35,000 lb/hr.

Production Manager of the new Carling plant is **Mehl B. Renner**. Chief Engineer is **Thomas H. Power** and Maintenance Foreman is **Woodrow P. Beauchamp**. The Carling-Atlanta plant is the fifth regional brewery of the rapidly-growing Carling firm. Atlanta plant with an annual production capacity of 350,000 barrels employs around 100.

Fansteel's Okla. Tantalum Plant

Tantalum in nearly all mill forms is now available from stock at **Fansteel Metallurgical Corporation's** huge \$6 million tantalum-columbium plant near **Muskogee, Oklahoma**. Plant, situated on 113 acres on the west bank of the Arkansas River, comprises 4 building units housing approximately 95,000 sq ft and a group of outdoor tanks for storage of liquid reagent chemicals.

Construction was started in November, 1956 and production, in March, 1958. **Lyle L. Clark** is Manager of the \$6,500,000 Muskogee operation.

One of the reasons for building the Oklahoma plant was the demand for Fansteel's tantalum capacitor — an important component in almost all types of electronic circuits. Fan-

steel produces a variety of tantalum capacitors and supplies tantalum materials and components to other leading capacitor manufacturers.

Tantalum and columbium ingots from the Muskogee plant are added to those produced at the Company's North Chicago plant and are processed into sheet, foil, rod, wire tubing and a large variety of fabricated parts and products for industry. This includes acid-proof tantalum process equipment for the chemical industry, such as heat exchangers, condensers and acid recovery equipment.

Temco Expansion in Tex. & Okla.

A 52,000 sq ft addition will be constructed at the south end of

Temco Aircraft Corporation's Garland, Texas engineering center, bringing total space to 150,000 sq ft. Harrell & Hamilton, Dallas architects have the architectural contract. Completion is scheduled for January, 1959.

Temco also recently signed an option with the City of Ardmore, Oklahoma for the operation of an aircraft modification, overhaul and maintenance facility at the Ardmore Air Force Base. New operation will be under the direction of **E. Fred Buehring**, Plant Manager of Temco's Greenville, Texas facility.

Temco has more than 8,000 employees working on prime contracts in the aircraft, target drone and guided missile fields in addition to carrying on large-scale airframe subcontract work and aircraft modification. Major facilities are now operating in Grand Prairie, Dallas, Garland and Greenville, Texas.

Contractor tells why he preferred Armco Pipe for industrial sewer installation



Long, 20-foot length of Armco SMOOTH-FLO Sewer Pipe is unloaded for installation at new Fastener Division Plant of National Lock Company.

"Long lengths and ease of joining made for good time; speed and economy were important on this job," says an official of Edwin Hogan & Sons, Inc., Rockford, Illinois, contractor who installed Armco Sewer Pipe for the new plant of the National Lock Fastener Division in Rockford.

More than 1500 feet of Armco SMOOTH-FLO® Sewer Pipe were installed on this big industrial project. The long lengths mentioned by the contractor were 20-foot sections of pipe. The high strength/weight ratio of Armco Corrugated Metal Drainage Structures makes it practical to handle and install these long sections. The result is reduced handling, fewer joints, fast completion, lower costs.

Once in the ground, Armco Structures provide other special advantages. Strong, tight joints assure continuing good alignment; guard against infiltration. Long, maintenance-free service is a fact. Write us for details about Armco SMOOTH-FLO Sewer Pipe and other Armco Drainage Structures.

ARMCO DRAINAGE & METAL PRODUCTS, INC.

DIXIE DIVISION **SOUTHWESTERN DIVISION**
P. O. Box 1343 • Atlanta, Georgia C & I Life Bldg. • Houston, Texas
Other Offices in Principal Cities



Making strong, tight joints is simply a matter of bolting on the coupling band—curved to match the pipe corrugations.



Here's Why



Masoneilan Model 4811

D. P. Transmitters

Give You Top Performance

These essential features of the Masoneilan design assure optimum performance in differential pressure, flow or liquid level applications . . .

- **Accuracy** within 1% of range span, plus fast response, and minimum hysteresis and nonlinearity. There is no distortion due to outside forces acting on cover and damping is built in at measurement source. Static pressure effect is less than 0.2% per 100 psi change.
- **Rugged Construction** provides complete protection due to overload, negative differential or overranging. Rigid mounting for horizontal or vertical surfaces. All working parts exposed to process fluid are made of Type 316 stainless steel. Extra heavy beam avoids bending.

● **Versatility** — range adjustable between 20 and 200 inches of water; suppression up to 50 inches. Suitable for differential pressure, flow, or liquid level applications.

Investigate all the advantages these improved transmitters offer you. Bulletin with full specifications sent on request.

MN7-4Q

MASON-NEILAN

Division of Worthington Corporation

35 NAHATAN STREET, NORWOOD, MASSACHUSETTS



District Offices or Distributors in Principal U. S. Cities

In Canada — Mason-Neilan Regulator Co., Ltd., Brantford, Montreal, Toronto.

European Manufacturing Associates

Crosby Valve & Engineering Co., Ltd., Wembley, Middlesex, England

Worthington, Paris, France

Worthington Gesellschaft M.B.H., Hamburg, Germany

Worthington S.P.E.C., Milan, Italy

Distributors in many other overseas countries

COVER is sturdy, galvanized, cast aluminum for maximum durability and protection to all internal parts.

FLOATING PLATE bolted directly to the diaphragm housing, eliminates distortion due to outside forces acting on the cover.

SECONDARY BEAM assembly consists of a hinged inner and outer beam. The inner beam, in contact with a pre-loading spring, provides overrange protection. A clearly marked 3 inch scale on the outer beam indicates the range setting in inches of water.

PRIMARY BEAM is extra heavy to minimize bending. The threaded beam facilitates range adjustment.

DOUBLE DIAPHRAGM, silicone filled and sealed, provides viscous damping at measurement source.

DIAPHRAGM HOUSINGS provide complete protection to diaphragm in the event of overload or negative differential.

BIASING SPRING maintains a positive pressure between the primary and secondary beams at zero differential.

RANGE ADJUSTMENT DISK permits simple, accurate range changes over a 10 to 1 adjustment range. A hexagonal locknut prevents the disk from being turned once the range has been set.

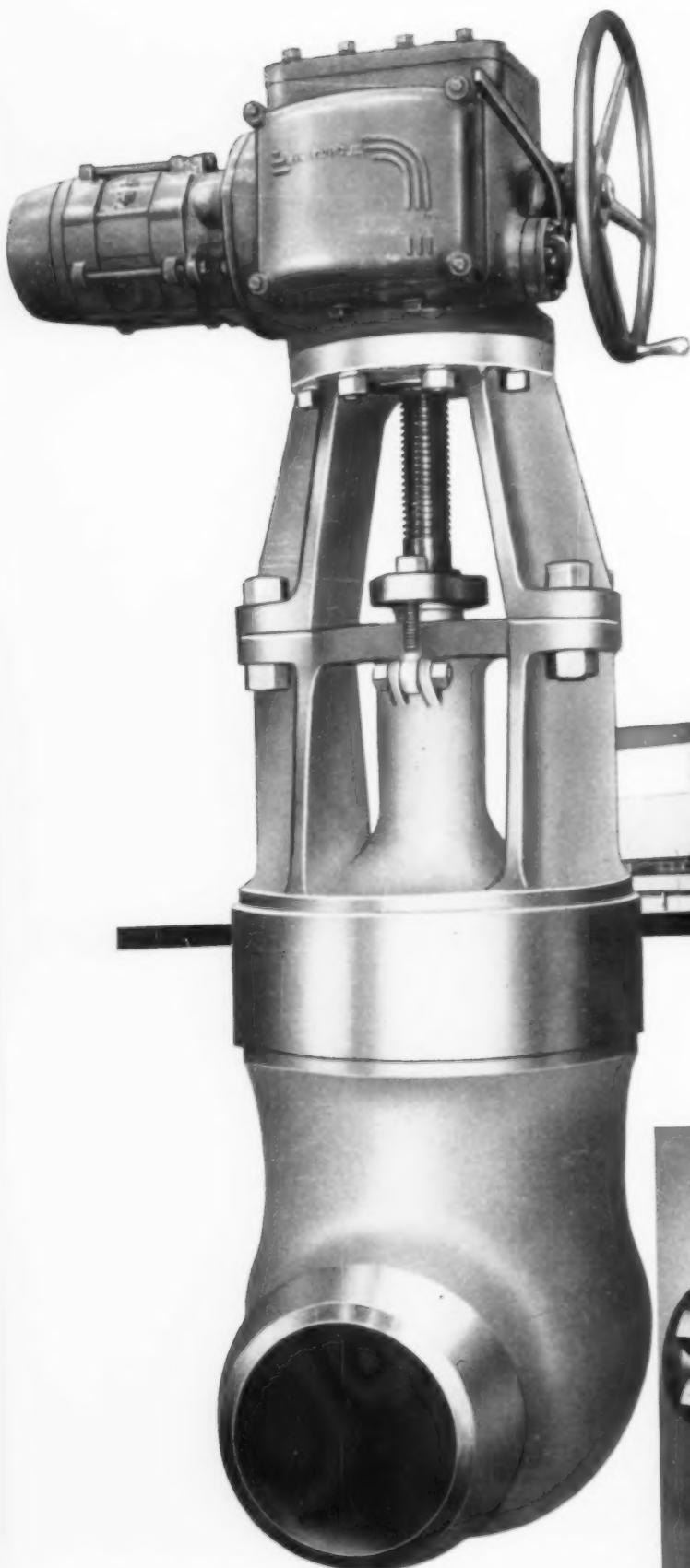
MECHANISM FRAME provides a rigid base for mounting subassemblies on the transmitting side of the instrument. All air passage are an integral part of the frame, thus eliminating the need for connecting tubing and fittings.

ZEROING SPRING located on the mechanism frame provides for the adjustment of an initial output pressure of 3 psi with a zero differential on the measurement.

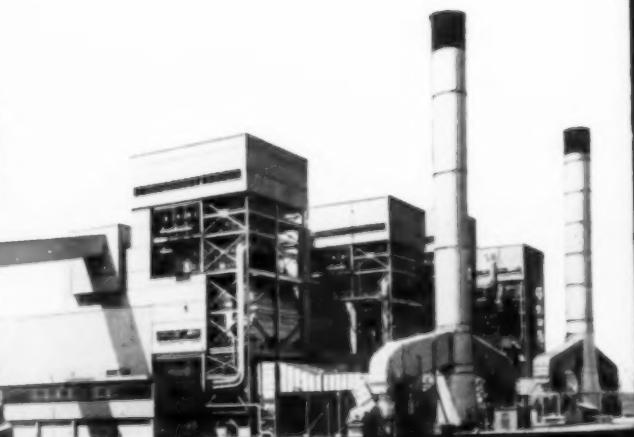
PILOT is a standard Masoneilan balanced, amplifying type relay which features large capacity and frictionless, Roating action. A plunger in a removable metering orifice provides for cleaning. The pilot is conveniently located, making it easily removable for servicing.

FLXURE BEARINGS are made of beryllium copper for high strength and low spring rate properties. This type of bearing provides true self-aligning, friction-free fulcrum points for the primary and secondary beams.

*Under pressures
from 2500#
to 150# psi...*

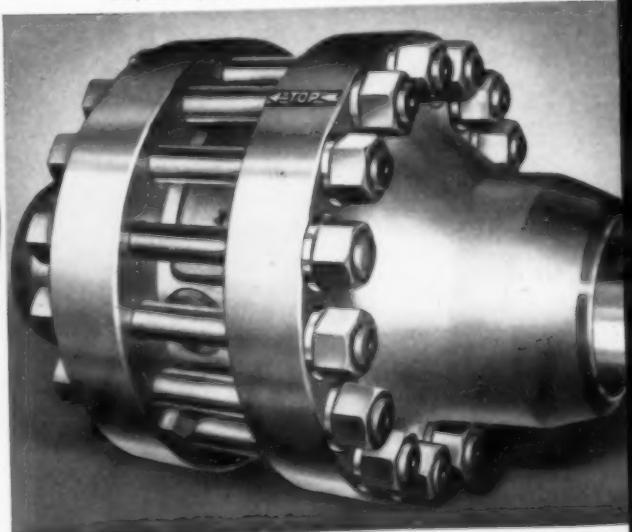


Typical of the Chapman 2500# psi alloy steel valves used in Kansas City. Has welded body and bonnet connection and is equipped for motor operation.



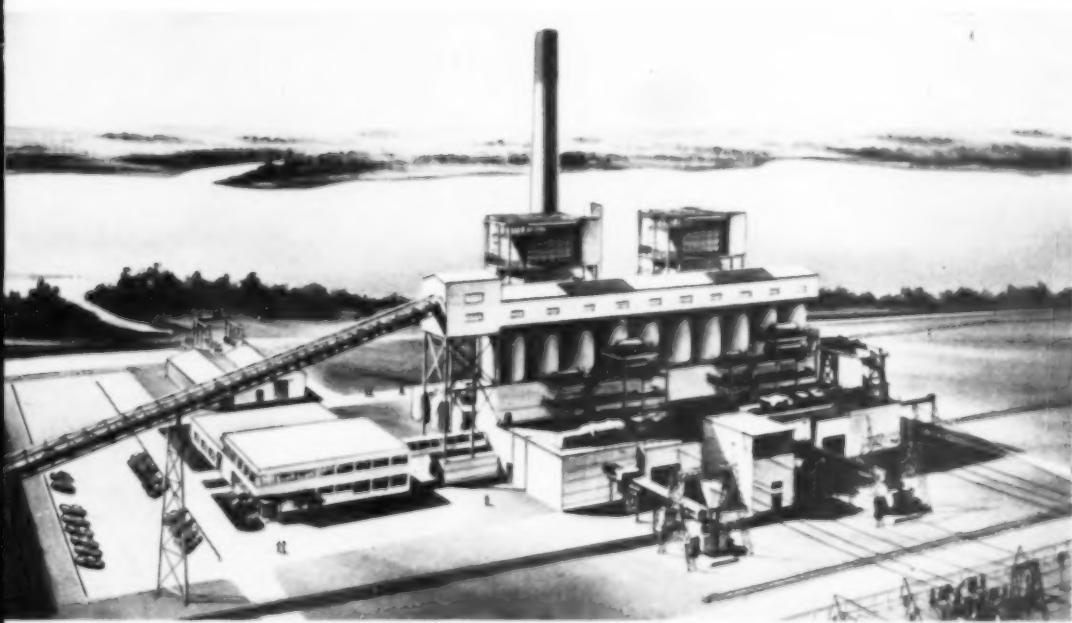
The Hawthorn Station of Kansas City Power & Light Co. located in
Kansas City, Mo.

Chapman 3-piece tilting disc check valve with welding ends.



CHAPMAN **VALVES**

*are doing a job for
Kansas City Power & Light Co.*



(Left) New Montrose
Station, located 60 miles
Southeast of Kansas City.

Ebasco Services
Incorporated, acted as
Engineers and Construction
Managers for Kansas
City Power & Light Co.

Here's a good example of what Chapman Valves can do for power plants.

In the Kansas City power plants, pressure requirements are varied . . . from 2500# to 150# psi. And Chapman Valves are meeting the specified pressure-temperature ratings . . . Chapman alloy steel gate, globe, swing check and tilting disc check valves . . . Chapman Valves, both hand and motor operated . . . Chapman Valves with welded body and bonnet or pressure seal.

In Kansas City, you'll find Chapman Valves in the 332,000 KW Hawthorn Station. You'll find them in the first brand new 156,250 KW unit at Montrose Station. You'll find them in the second Montrose unit scheduled for completion in 1960.

The reason for all this makes an interesting story. Chapman goes all out . . . 100 per cent . . . to meet valve requirements in a true engineering way. Upon request, one of our engineers will gladly talk to you about it.

*The **CHAPMAN** Valve Manufacturing Co.*

INDIAN ORCHARD, MASSACHUSETTS

For over 75 years, Chapman has been designing, developing, improving, building, testing and delivering valves to meet usual and special requirements for power plants, water works, chemical plants, refineries and industrial use.

News of the South-Southwest — more power . . . more plants . . . more money

High-Grade Scrap From New Proler Process — Houston

On a 35-acre tract on the Wallisville Rd. in Houston's industrial area, a new plant (in one continuous, fully automatic operation) is processing old automobiles and other scrap metal into small pieces of high density material, free from impurities and non-ferrous adulterants. It is expected to make possible important economies in the production of steel with scrap as a basic raw material.

The Proler Steel Corporation calls the new product "Prolerized steel" — which can be used in open hearth charges, in the cupola process, in electric furnaces and in blast furnaces. End product, which is han-

dled in bulk like the best grades of scrap has many advantages over the compressed "bundles" into which most automobile and other light scrap is now converted. Process eliminates paint, enamel, porcelain and other foreign matter and removes all non-ferrous materials such as brass, copper, aluminum, rubber, wood, glass, etc. Presence of rubbish and adulterants in bundles has heretofore offered headaches for steelmakers.

In the automated process, scrap is loaded into a 15 ft wide conveyor by a grapple-wielding crane, broken into fragments and conveyed again into two huge hoppers. Out of one of them flows clean steel fragments ready for melting and out of the other comes a steady stream of rubbish.

Proler officials say that only between 75 and 80% of No. 2 bundled

scrap is actually steel — remaining 20 to 25% consists of impurities which go off as slag in the steel-making process. They believe that the percentage of steel yielded from the new Proler process is probably in the nineties.

Rate of production, which will be determined after the plant has been in full use for several months, is estimated at between 500 and 1000 tons of processed scrap per day. About 60 automobiles will make one carload of finished Prolerized steel.

Armco's Sheffield Division in Houston has contracted for the entire output of the Houston plant. The Proler operation will be the largest and most modern scrap processing plant in the country. Negotiations are under way for construction of similar plants in other cities which are near scrap-consuming steel plants.

NEW CONTAINER FIRM — TEXAS

Formation of a new Texas firm, the **Southwestern Steel Container Co.**, has been announced by **Gordon D. Zuck**, president.

With home offices and manufacturing plant in **Dallas**, the new firm will manufacture a full line of steel

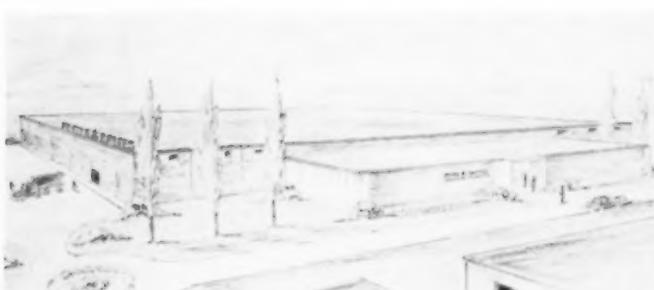
shipping containers for petroleum, paints, agricultural and industrial chemicals, printing inks, and food products. It will serve the needs of varied industries throughout Texas, Oklahoma, Arkansas, Louisiana, New Mexico, Colorado and Arizona.

Mr. Zuck, who is also president of **Vulcan Steel Container Co.**, with plant and headquarters offices in **Birmingham, Ala.**, has been in the

steel shipping container business since 1932. He emphasized, however, that the new Texas firm will be an independent, self-sustaining operation in Texas.

Modern production facilities in Dallas will be available for producing all popular sizes and styles — both open and closed head, hi-bake protectively lined containers with all standard pouring openings, and lithographed or printed for market use. Plant will employ between 80-100.

Fred A. Kusta is Vice President and **Charles B. Little, Jr.**, Vice President and Sales Manager.



\$1 Million Printing Plant — Ga.

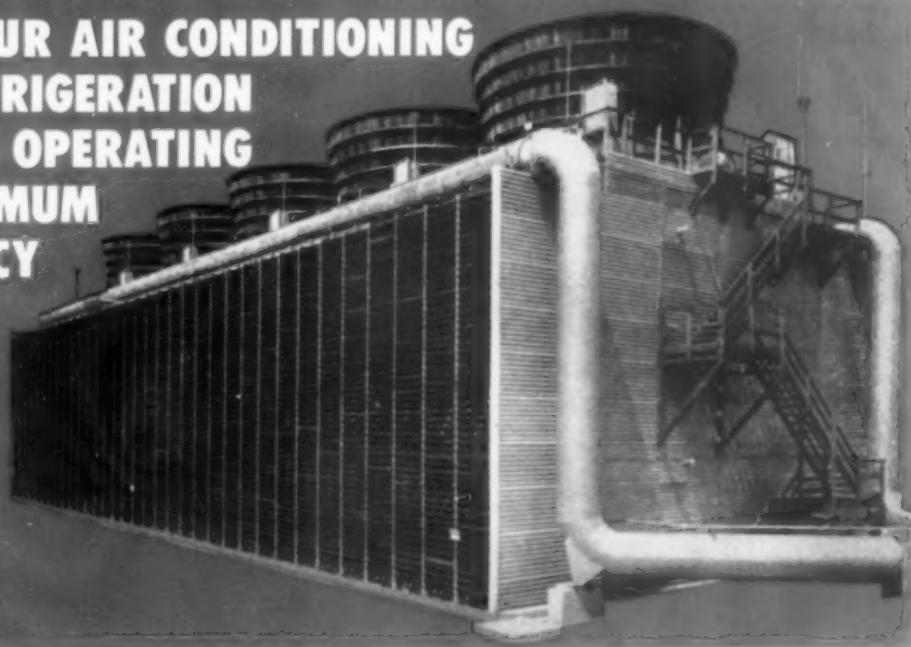
A new 82,000 sq ft, \$1,250,000 printing facility is now under construction in the Piedmont-Southern Industrial Center in Atlanta for **Foote & Davies, Inc.**, 72-year-old Atlanta printing firm, according to Albert Love, President. New plant will be completely air conditioned, with humidity controls for all working areas.

Prefabricated Pipe Assembly Plant — Miss.

Prefabricated pressure pipe assemblies are being produced in the new \$230,000 **Associated Piping and Engineering Company** plant in **Gulfport, Mississippi**. **Paul Keibler** is Plant Manager of the facility, a branch of the Compton, California firm. About 100 are employed in the new operation.

(More News — p 88)

During the coming Peak Load months KEEP YOUR AIR CONDITIONING AND REFRIGERATION SYSTEMS OPERATING AT MAXIMUM EFFICIENCY



Anco water treatment prevents and removes rust and scale... kills slime and algae in your equipment

THE TIME IS AT HAND when refrigeration and air conditioning equipment must be operated longer and with more efficiency. Scale and rust, acting as insulators, will reduce heat transfer and produce high head pressures. Algae and slime in the system will retard circulation and reduce heat dissipation. The proper feeding of correct formulas and a program of continued control by ANCO can correct these conditions.

ANCO SCALE REMOVER, an efficient dry formula, based on DuPont Sulfamic Acid, works

while the system is in operation, to dissolve heavy scale formations in a few hours.

ANCO COOLEX is an inexpensive, effective formula to protect all metal surfaces against rust, pitting and scale formation. Maximum efficiency of operation is assured, with a minimum expenditure for upkeep.

ANCO ALGAECIDE kills and removes algae and slime from your cooling water system. This highly effective chemical does the job while your equipment is operating.

*Our competent service representatives covering the South offer you a free analysis of your water problems. It will pay you to get this treatment program installed in your plant now.
Write for full details. There is no obligation.*

SPECIALISTS IN MAKING
WATER BEHAVE



Anderson Chemical Company, INC.

Macon, Ga.: Box 1424 • Phone 5-0466
Memphis, Tenn.: Box 2432, DeSoto Station • Phone: BROADway 2-2806

MANAGEMENT CLINIC



Conducted by ROBERT H. EMERICK, North Charleston, S. C.

TRAINING PROGRAMS - On Company Time? Costs?

Question

IN OUR shops we employ several hundred craftsmen of various trades, such as machinist, pipefitter, electrician, and sheet metal worker. From time to time these people ask us to initiate some sort of training program that will increase their knowledge of their work, and we want to do something about it. However, we are inexperienced in this kind of thing and would appreciate answers to the following questions:

1. Should we hire a teacher or would a correspondence course be better? 2. Considering the variety of trades, how should we select subjects to be taught? 3. We hear some of these classes are being run on company time, but we're not sure we could afford that. Would the men attend on their time, say after hours? 4. How would the unions feel about this? 5. Should the employees pay part of the cost?

Suggestion

WE FEEL that live instruction is always better than correspondence when it comes to teaching a subject. The reason is, primarily, that questions are answered promptly in a class, but the time lost in getting answers by mail lets the interest cool off.

Subject selection has been handled successfully in large organizations by sending a list of proposed subjects to the shops. Craftsmen indicate what they would like to study in the order of preference, adding ideas of their own. When the lists come back, all management needs to do is tabulate the votes and start preparing the course that is most wanted.

Opinions differ on the need for holding classes on company time. The Dow Chemical Company offers extensive training to their technical operators, all on company time, and the results are excellent. By contrast, the Government limits its on-the-job instruction to supervisory training and apprenticeships; the technical people and craftsmen get their extra classes after working hours, usually with an instructor provided by the Government. The results here are also entirely satisfactory.

Probably if the instruction upgrades individual skills directly, as for power plant operators, the company should provide the time. For collateral training which benefits the company only indirectly (teaching refrigeration to machinists and pipefitters) the company might reasonably provide the course, the instructor and the classroom; the hours of instruction would be the employees' contribution.

Unions as a rule cooperate whole-heartedly on these training programs. Most companies keep the unions informed of their training plans and ask for comments, a practice that improves relations all around.

The last question about employees paying part of the cost can be answered only by the company concerned. Can you afford it? If you can, then it is best to bear all costs. Employees in small companies absorb the teaching costs in order to take the course, but if the company wants to exercise a measure of control over the subject taught, some financial participation is essential.

One good turn deserves 192 others!



Pipe fabricators: Cornell & Underhill, Inc., Hoboken, N. J.

During fabrication, the USS* NATIONAL Seamless Steel Tubes used in this 8-ton heat exchanger were turned, or bent, 193 times! What's more, fabrication involved 584 pipe welds of various types and 1,720 inches of fillet welding. Mainly, the 35-foot-long, 5-foot-high bundle consists of $\frac{3}{4}$ -inch Schedule 80 NATIONAL* Seamless Pressure Tubes; fabricated for the Solvay Process Division of Allied Chemical & Dye Corporation.

NATIONAL Seamless Pipe and Tubes are known the world over for safety and dependability. They are available in carbon through the various alloy and stainless grades. Get the complete story by sending for Bulletins 10 and 26. And, for technical assistance, our Mill Service Force is available for field consultation. Write to National Tube Division, United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

"The world's largest and most experienced manufacturer of tubular products—NATIONAL TUBE"

National Tube
Division of



United States Steel

*TRADEMARK

Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors • United States Steel Supply Division
United States Steel Export Company, New York



INDUSTRY SPEAKS

The South Is Ready for Automation

THE LACK of automated industrial facilities may be a major factor contributing to America's present recession. **John K. Hodnette**, executive vice president of Westinghouse Electric Corporation, said before the annual meeting of the **Southern Research Institute** in Birmingham.

"Although American industry has gone through a tremendous expansion of production facilities since World War II, the economy now faces the problem of adjusting to this vast expansion in capacity. The problem is aggravated by the fact that costs and prices have been rising even though production, sales, and profits have fallen.

"It is up to industry to do what it can to return costs and prices to the more normal relationship of a free market . . . but the basic problem is one of lowering the costs of production. The quickest, most effective way to stimulate sales is by keeping prices just as low as we possibly can in the face of rising costs. And the best way to do that, in the situation that exists, is to use better machines and methods to improve operating efficiency.

"Much of American industry is not ready for full automation — the push-button warehouses and factories that are operated by tape punched full of marketing data. Many segments of industry need routine mechanization — more efficient use of less expensive and more commonplace machines and concepts.

"But the most important single effect of automation is bound up in the word *survival*. If we are to compete as a trading nation and if we are to survive as a military power in a dangerous world, then we must call on every benefit and resource that automation can give us.

"Automation is not something American in-

dustry can buy and install overnight. Rather, it is a whole way of industrial life that must be developed slowly and laboriously through years of experience."

Automation will have favorable effects on the five elements industry must use in turning out goods and services:

Time — Man can do nothing to increase time beyond 168 hours a week. But he can accomplish more in the time he has by automatic processes that turn out more in a given unit of time.

Space — Automation requires far less processing area per unit produced. Inventory of goods in process is cut to a minimum.

Materials — Automatic manufacturing makes continuous inspection and testing possible, resulting in more uniform end products of higher quality.

Money — While automation often requires heavy capital investment and higher maintenance costs, unit production costs are greatly reduced where it is applied properly to a suitable product or process.

Manpower — With continuous automatic production there comes a reduction of man-hours worked per unit of production.

"Automation favors any region that is growing industrially, that is attracting industry, and that is building new plants and installing new equipment. The South is certainly Number One in the nation in this respect.

"The South now has 22% of the nation's manufacturing facilities, he added, and a high percentage of these facilities are new and are based on technological advances of the past several decades."

Some facts that may interest you—

Our yearly tonnage of about 18,000,000



includes

a variety of coals with a complete range of analysis.

We maintain a central coal laboratory



supplemented by

quality control labs at each of our larger mines. Our prepara-

tion facilities are modern and utilize the latest equipment.

Teletype service connects



sales offices with all our major

mines. And our trained representatives



understand your

combustion needs and work intelligently to meet them.

it all adds up to these benefits for you

- You get a supply source that can handle the largest needs
- You get the coal that's best suited to your combustion equipment
- You get coal that conforms to standards
- You get responsible advice and service
- You get time-tabled delivery

BEACON COAL



EASTERN GAS AND FUEL ASSOCIATES

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BIG opportunity . . .



THE SOUTH has not experienced the business drop of other areas. Plants are larger and products are more basic — processing raw materials through initial stages. We have relatively fewer finishing plants. Consequently, periodic changes in consumer demand are dampened somewhat before affecting our large processing industries.

New plants are being designed to offset, as far as possible, the high labor costs, and old plants are being improved to reduce production labor. That means automation, and automation means automatic handling and movement of materials. That's the big technological opportunity — material handling.

TOO LITTLE consideration is given to power requirements when planning material handling installations. Most of the mechanical power in big plants is used to push things from place to place, rather than to change the character of the product. Relatively little power is used for refining, cutting, shaping and otherwise changing the character of materials. (Steam and heat requirements are another thing altogether and are not included in the term "power" used above.)

Power required for material handling is largely consumed as friction. So lubrication becomes immensely important as a power saver. Lubrication engineers give much thought to maintenance but frequently forget power.

Starting-up loads in highly mechanized plants can be enormous. That creates excessive power demand charges and necessitates oversize motors. Both are expensive. Lubrication equipment and lubricants should be designed to minimize starting loads as well as running loads. Few systems are so designed. In fact, many designs depend on rotation to make the lubrication effective — there is little lubrication at instant of starting.

Lubrication can be a highly effective production tool — not just a wear and squeak eliminator. This statement is especially true of material handling equipment.

LET'S TRY to look simultaneously in two directions — at the big processing plants that we now have in the South, and at the coming finishing plants that will convert these processed materials into finished products to meet a fast-growing consumer demand. We already have an enormous stake in the processing industries and an equally important potential in the finishing plants that are rapidly developing.

In the past, the South's industrial activity has been based on the large processing plants located near their source of basic material — and shipping in lesser materials and supplies, and shipping out chemicals, metals, paper, etc., to be finished in other areas. Petroleum and textiles have been exceptions.

NOW THE PICTURE is changing rapidly. Many small industries are developing to furnish supplies to the older big plants, and while the total of consumer products plants is not yet impressive, percentage growth is enormous. These trends will continue at a more rapid pace.

One outstanding example serves to substantiate the above statements: Electrical Machinery and Equipment.

General Electric and Westinghouse have led the parade. There are now 22 major G-E plants in our area: transformers, distribution equipment, instruments and controls — and the enormous G-E electrical appliance plant at Louisville.

The same is true of many other large national companies. And there are now also a great many small locally owned plants in the electrical equipment field.

So that's the big potential for the future in materials handling. We will be making more finished products that sell for more per pound and require more labor, more machinery, and more lubrication for production in highly mechanized plants. Competition and rising labor costs will force southern plants to move materials mechanically with modern handling equipment.

... Modern MATERIAL HANDLING ➤ ➤

At Institute, West Virginia . . .

THE NEW LOOK in plant construction

how PALLETIZATION and three-stage cycle can cut costs

BY ADAPTING a technique used successfully by building supply dealers, and adding a few innovations of its own, Union Carbide Chemicals Company at its Institute, West Virginia plant, came up with a new system for unloading, storing and delivering construction materials with estimated savings of \$100,000 in the first year of operation.

Palletization accomplished the job — every item handled is set on a pallet or bolster as soon as it is received and remains palletized until it is delivered to the construction site. Two fork trucks and two straddle carriers transport the pallets and bolsters.

MANY plants are caught in a squeeze brought on by rising construction costs on one hand, and, on the other, an increasing necessity to revamp, rebuild and maintain production facilities to meet new competition.

Union Carbide's Department of Design and Construction took a close look at their construction program and concluded that the handling of building materials was the one area in which considerable savings could be obtained.

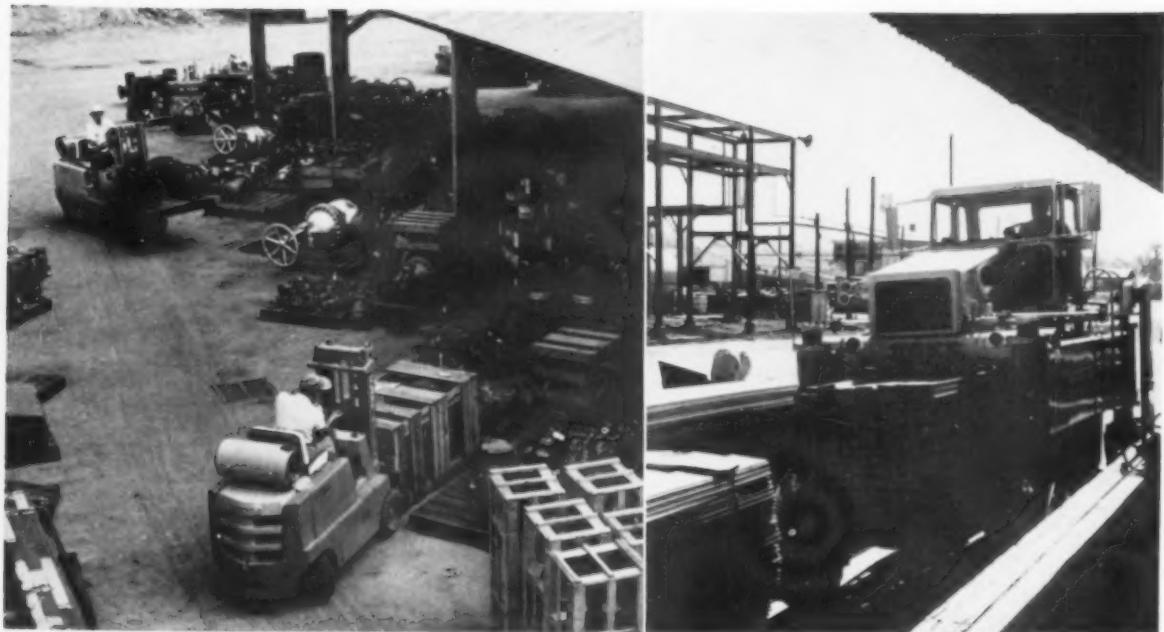
Savings have been effected mainly in two areas: expensive manual handling has been cut 45% and the number of handling

ABOVE — Biggest single advantage of palletization is in handling long sections of pipe. It is unloaded directly onto bolsters and moved to storage and from there to construction site by straddle carriers.

RIGHT — Nearly everything is palletized. Note maximum use of vertical space. By tiering pallets whenever possible, floor space is saved for bulky items which can't be stacked.

steps has been reduced. For the most part materials now go thru





Materials assigned to field storage are placed by fork trucks in "materials shelter" alongside dock. Items were previously loaded onto trucks for delivery to storage. Now straddle carriers can easily move them to field storage, eliminating two steps

in handling process. Lumber used to be stored manually in racks. Now (right photo) most of it is placed on bolsters and hauled to storage by straddle carriers. Most suppliers deliver lumber in unit loads, ready for truck-carrier handling.

a simple three-stage cycle of receiving-storing-delivery. Manual handling into and out of intermediate storage has been practically eliminated.

Along with excellent use of palletization, the company made some important changes in the layout of its receiving area. A depressed dock for truck unloading replaced an elevated dock. Hydraulic dock levelers were installed so that fork trucks could drive straight into trailers. A 30 ft portable magnesium ramp permits fork truck entry into railroad cars.

All of these changes were made to permit optimum use of mechanical handling methods, and thus tie in with the new emphasis on palletization.

Even after the year-long study which preceded actual implementation of the program, the company was somewhat surprised at the range of materials which could be palletized. Besides such conventional items as cartons of nuts and bolts and kegs of nails, the company is palletizing cement, acid brick, gypsum block, resin,

lumber, valves, flanges and carbon brick, etc.

But the biggest saving came in the new technique for handling structural steel and pipe. Previously these long, heavy items had to be moved by crane — and a three man crew — during every step of the handling cycle. Now cranes are used only for unloading the pieces from railroad cars and for erection at the job site. In between, all handling is accomplished with a straddle carrier — and one man.

The Old Look — To appreciate Union Carbide's new handling program, a quick look must be taken at things as they used to be. 95% of the materials are received via truck and are unloaded at one of three points: 1) the receiving dock at the main store room; 2) field storage areas, and 3) storage racks. (The remaining 5% are delivered directly to the construction site.)

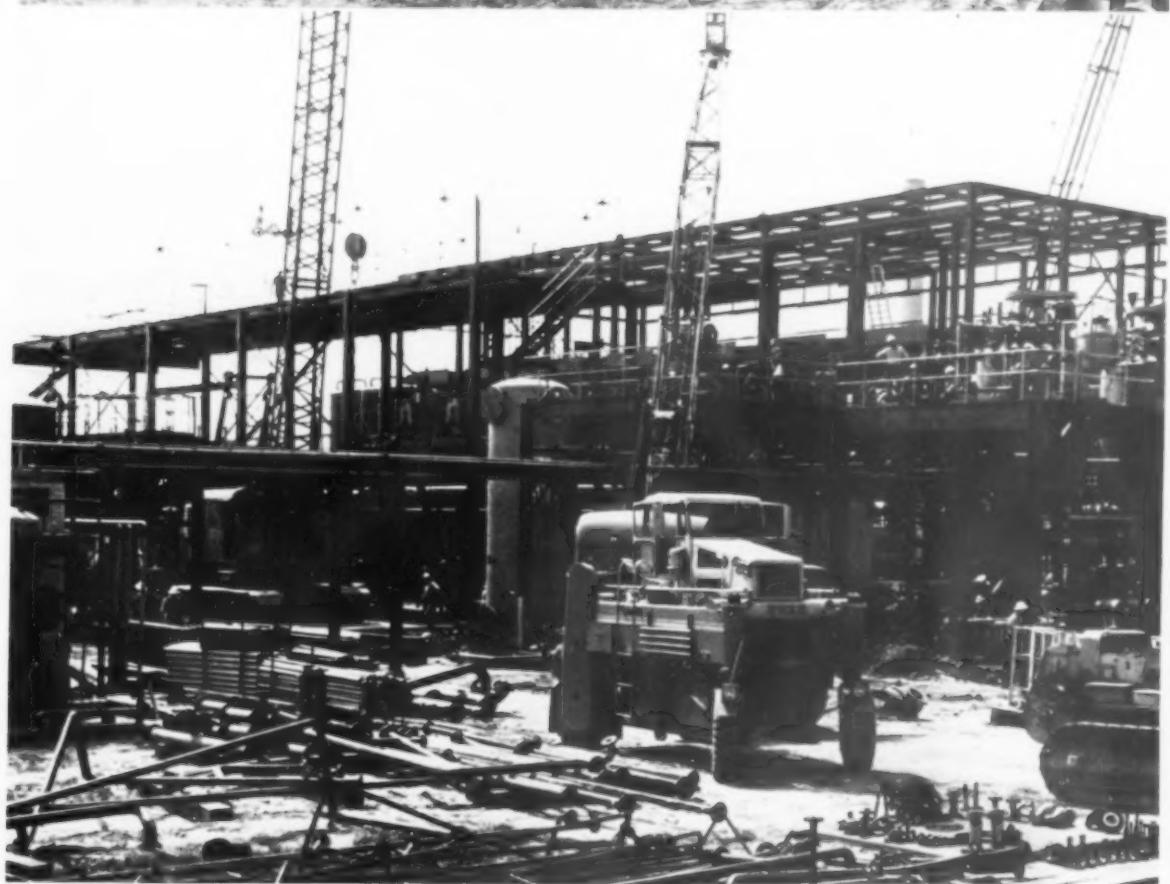
Materials received at the main store room are mostly small items packaged in cartons, drums or similar containers. Previously these

were unloaded manually from the truck or railroad car, put on a hand truck and wheeled into the store room, usually to be placed in bin storage. This required manual handling at several points: from the delivering vehicle to the hand truck; off the hand truck to an intermediate or temporary stor-

↗

TOP PHOTO shows "open air storage" where bolster-loads of steel pipe, tile and sewer pipe can be picked up and deposited quickly by carriers without extensive maneuvering.

Straddle carrier moves onto construction site and deposits materials as close as possible to point at which they will be used. Carrier will drop load in two or three seconds and be on its way. Manual crane unloading required with trucks is eliminated.



At Institute, West Virginia . . .

Palletization Cuts Construction Costs

(Continued from page 34)
age point (often the store room floor); and finally from that point into the storage bin.

At the same unloading dock, some materials destined for field storage were unloaded, checked, and then re-loaded into trucks for delivery to the storage area, where the unloading operation was repeated. Other materials for field storage were trucked directly to the storage site, by-passing the receiving dock.

Insulation, lumber, pipe and

structural steel were (and still are) unloaded at storage racks. Insulation was usually unloaded by laborers from trailers to hand trucks, wheeled to the rack and manually stored. Lumber was unloaded by hand into lumber racks. Pipe in small sizes was unloaded by hand directly from the trailer to racks. Large pipe was lifted from trailers or railroad cars by a truck crane and placed in racks. And in the steel yard, an overhead yard crane unloaded and stored structural pieces.

After all this handling, much of it manual, was accomplished to get materials into storage, the procedure had to be reversed when the supplies were called for on the construction site; out of storage bins onto hand trucks, off hand trucks into delivery trucks, and finally off delivery trucks at the job site. As before, pipe and steel were handled by truck crane.

The New Look — A little addition will show that with the previous methods, regardless of the unloading point, the average item was manually handled from three to six times.

Under the new system, manual handling at the storage racks and field storage areas is limited to unloading materials from delivery trucks. From that point on, all handling is mechanical. At the main store room, pallets and fork trucks have replaced hand trucks for all but the smallest shipments.

When a delivery truck pulls into the depressed dock, the hydraulic dock levelers are actuated to provide fork truck entry. An empty pallet is placed by fork truck either on the dock or in the delivery truck. The fork truck operator then unloads the material directly onto the pallet, at the same time checking the merchandise on the shipping ticket.

If the material is going into bin storage, the fork truck carries the pallet into the store room. If the material is assigned to field storage, the pallet is set in a "materials shelter" (a roofed structure with no walls) alongside the dock. This method has already reduced unloading time through elimination of the numerous back-and-forth trips with hand trucks.

Instead of the conventional trucks formerly used, straddle carriers now transport palletized materials to field storage areas. Again, this method saves time because loading and unloading of trucks is eliminated.

Materials which by-pass the receiving dock and are unloaded at field storage areas are placed immediately on pallets or bolsters. This is the only manual handling done at these points. When the material is moved to the job site, it's moved by straddle carrier.

The racks used for storing in-



At Memphis, Tennessee . . .

Movement in Narrow Aisles

CHAPMAN Dewey Lumber Company in Memphis, Tennessee, was faced with a problem of raw material and finished product movement within their box factory in limited aisles and accessways. Supplying shooks (box sides, bottoms or partitions) to the saw machines, matchers, joiners, hand hold machines and finally the printers involved confusion since machine operators sought and removed their own materials.

Under the new system a Hyster 20 Lift Truck of 2000 lb capacity feeds and delivers in-process materials on virtually all operations. Hand jacks and skids were replaced with this efficient unit of high maneuverability characteristics. Limited by 40 in. aisles, the Hyster 20 is compactly designed to handle skip loads of 1000 board feet of shooks or more.



At Lenoir City, Tennessee . . .

Less Handling With New Packaging Set-Up

THE MATERIALS handling project at The Yale and Towne, Tennessee plant consists of packaging a complete assembly together with from three to six component parts for attaching the assembly for use. The assembly and component parts are placed together in a unit shipping carton and thirty unit cartons are packed in a master shipping carton.

This project was initiated because of a need to conserve floor space, reduce indirect labor cost in the form of materials handling, improve housekeeping, provide a more efficient work place layout to assure a smooth and continuous flow of product, and a possible reduction of direct labor cost on the operation.

The original packaging operation consisted of six different packaging stations conforming to the six major assemblies coming from the assembly line. Some of the component parts at one station are

the same as those at the other five stations. Each of the six different assemblies was moved to the six different packaging stations from the assembly line.

Two men were required full time to keep the assemblies moved from the assembly line to the corresponding packing station and to keep the packing station supplied with components parts as each box of parts was used. Empty assembly trays were returned to the head of the assembly line by the material handlers.

By looking at the photograph of the packaging station now in operation, one can see that:

1. The six major assemblies come from the assembly line direct to the packing station via three tiers of conveyor (two lanes wide) with the empty tray return to assembly on top.

2. Component parts are brought together at one station and conveyorized into the packing area.

Since the new packaging set up has been in operation, the assemblies are not handled between the assembly line and packing stations, empty trays are not carried to head of assembly line. Boxes of component parts are loaded on conveyor supplying packing station in approximately twenty minutes which needs to be done only twice a day, leaving the remainder of the day free for the material handler to be assigned other tasks.

Only one material handler is now needed to service area formerly serviced by two material handlers. Direct labor cost on the packaging operation has also been reduced.

*By CLARENCE H. HUGHES,
Chief Standards Engineer, The
Yale and Towne Manufacturing
Company, Lock & Hardware Di-
vision, Lenoir City Plant, Lenoir
City, Tenn.*

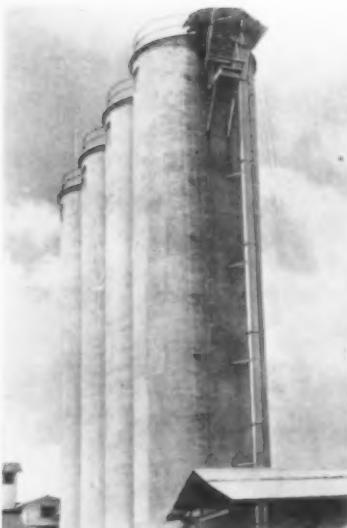
sulation, lumber, pipe and steel are slowly disappearing. Now, these items are placed on bolsters or pallets as soon as removed from trailer or railroad car. While cranes are still used for unloading, there is little need for them for further handling. The straddle carriers do the job faster and cheaper.

Equipment — The function of

the fork trucks and straddle carriers is essential in the new operation. The two Clarklift fork trucks, both of 4,000 lb capacity, handle short hauls and, in some areas, tier loaded pallets. Their versatility in being able to handle any kind of palletized load is important because of the variety of materials received. They're powered by liquefied petroleum

gas — a choice the company made because of the savings effected in fuel costs and maintenance.

The two 30,000 lb capacity Clark-Ross straddle carriers are the prime horizontal movers. Their unique ability to pick up or deposit a load in a few seconds and travel with it at truck speed gives them an advantage in mobility over conventional trucks.



At Dawson, Ga. . . .

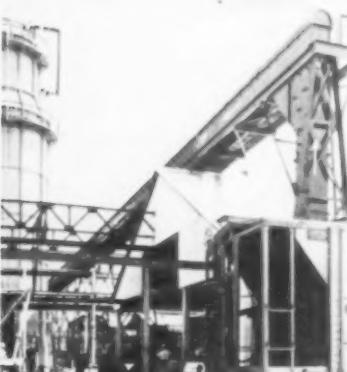
PEANUTS

AT DAWSON, GA. Cinderella

Foods Co. was one of the first in the peanut butter manufacturing field to install concrete storage silos for shelled nuts.

Present storage capacity is 2,000,000 lb in four large units. The top of each silo is equipped with

After running horizontally for 21 ft, elevator bends into vertical run of 78 ft before discharging peanuts into storage silos.



At Lake Charles, La. . . .

CATALYST

AT LAKE CHARLES, LA. a

Zipper (Stephens - Adamson) conveyor moves the bead catalyst from closed bottom dump cars to a bucket elevator lifting to storage. A conventional belt conveyor line

Bead catalyst moves from closed bottom dump cars to bucket elevator lifting to storage.



At Alexandria, Va. . . .

COAL

AT ALEXANDRIA, VA. the Po-

tomac Electric Power Co. uses a S-A belt conveyor system for picking up coal from two hoppers

Conveyors from car dump hopper rise to breaker house on left. Boom conveyor gets load from by-pass chute in breaker house.



At Kingsport, Tenn. . . .

ACETATE

AT KINGSPORT, TENN. the Ten-

nessee Eastman Co. has 6 manufacturing divisions. Dominating the manufacturing area is a 15,000,000 lb silo storage system for cellulose acetate.

Circular bin discharger under storage silos deliver measured discharge of cellulose acetate to conveyor systems running to processing.

an insecticide spray which, heavier than air, penetrates to the bottom, eliminating insect infestation.

Another contamination safeguard is a pair of Redler (Stephens-Adamson) conveyors which carry the nuts to storage with practically no breakage.

Shelled nuts are delivered in enclosed tractor-drawn carts. Peanuts fall into a receiving hopper which feeds a 9" L-type Redler

elevator. This runs horizontally for 21' and then bends into a vertical elevating run. It rises 78' before discharging into a horizontal unit running over the storage silos. Conveyor unit is 64' long and is equipped with four slide gates for silo discharge.

Elevating units handle 22 tons per hour at a chain speed of 50 fpm. Both units are equipped with Saco speed reducers on the drives.

was blocked at ground level by intervening buildings and the underground route via a tunnel meant cutting through foundations and relocating pipe lines.

An overhead route was obvious, and a study showed that a single Zipper conveyor would follow the required overhead path.

Catalyst is delivered in totally enclosed bottom dump cars or in

box cars. A side hopper or shallow bottom hopper gravity feed to the belt which runs for 20' in a 6-ft tunnel. It then makes a 35' lift before moving horizontally for 250'.

Conveyor-elevator system has a capacity of 10 tph and a belt speed of 106 spm. It is driven by 5 hp motor through a Saco Speed reducer.

under the car dump and carrying it 320 ft to a breaker house.

From the breaker, coal is carried by 54 in. breaker conveyor to a junction point. It can be either diverted at this point to a stocking out boom conveyor or carried 270 ft to the boiler house. Here, coal is transferred to a horizontal con-

veyor over the bunkers. Discharge to individual bunkers is controlled by a traveling tripper.

Main conveyor systems, consisting of a single 36 in. belt line equipped with Pacific type carriers, handle 350 tph. Stock pile capacity of the plant is approximately 175,000 tons.

Redler conveyors move this material to storage in the silo building and from there to weigh bins in one of the processing departments. Sealed casings afford protection from contamination.

Approximately 57 such conveyors are employed with 72 circular bin dischargers, assuring a steady flow of materials from silos

and batch bins. Units range in size from 7 to 13 in., with capacities up to 7 tph.

Conveying systems are controlled by push button panels with rack and pinion gates controlling flow to particular storage areas. Circular bin dischargers are designed to prevent arching of material and insure steady flow.

Pallet Truck

ALTHOUGH the aluminum foundry of Anderson Electric Company in Birmingham, Alabama, was set up with wire pallet baskets and pallets to be handled and stacked with fork lift trucks, certain bottlenecks occurred because the trucks were not always available for the lateral movement of single unit loads. The cost of a third fork lift truck could not be justified because it was not needed for stacking and tiering. Furthermore the high masts of the fork lift trucks would not allow pallet boxes and pallet loads to be put on and taken off over-the-road trailers.

One Raymond Corporation Electric Pallet Truck was purchased to supplement the two fork lift trucks.

The fork lift trucks are now fully assigned to long hauls and stacking applications. The Raymond Electric Pallet Truck is available to anyone for moving single loads, transferring parts from storage to shipping and for loading and unloading palletized shipments on over-the-road trailers.



The new hand pallet truck complements the stacking truck by transporting pallet loads to and from rack storage room.

At Albemarle, N. C. . . .



TRUCKS SAVE SPACE and CUT COSTS

AT THE new Collins & Aikman dyeing and finishing plant at Albemarle, N. C., handling costs have been cut in half and storage space increased 100% by the use of electric industrial trucks.

The 150,000 sq ft plant replaced an older factory in Philadelphia, where all goods were manually handled. The savings at the new plant have been effected by just four electrically-powered trucks produced by Lewis-Shepard Products, Inc. According to C & A records, these savings have repaid the entire original cost of the trucks in less than a year.

Obviously, with a square foot of space costing from \$5 to \$10, a 100% space increase is worth a considerable amount of money. And with labor costs constantly on the rise, labor savings are equally as valuable.

The four trucks are used in the plant's entire operation, from re-

Ram-Equipped "walkie" truck picks rolls from roll-up machine and places them on 4-wheel hand trucks. Operator controls all movements from control handle.

Rolls are deposited in storage racks. Note how trucks permit maximum use of vertical storage space.

Trucks unload materials, start them on their way thru dyeing lines, store finished products and finally load outgoing shipments.



Process steam plant for the new Collins and Aikman Corporation was described in SPI for March, p. 66. Plant houses two

coal fired Keeler boilers, each producing from 50,000 to 70,000 lb/hr. The Albemarle plant is the finishing operation

for the Company's automotive division which handles upholstery fabrics, carpeting, and decorative fabrics.

ceiving to shipping. Here's how Warehouse Manager Daniel McGuire describes the trucks' normal working day:

"They unload materials from incoming trucks; stack incoming chemicals and textiles; start the materials on their way through the dyeing line; store the finished products; and finally load outgoing trucks."

Improvement over the Philadelphia operation has been particularly impressive in the finished products warehouse. It is here that space has been doubled, as goods are now stacked three tiers high, or right to the ceiling, by Lewis - Shepard high - stacking trucks.

The three trucks used in the Albemarle warehouse are Lewis-Shepard Model "M" units, operated from a stand-rest driving position. All three vehicles can high stack loads weighing as much as 4000 lb to heights of 12 ft.

As soon as newly-dyed rolls of automotive textiles are wrapped, they are placed cross-wise on a pallet. These pallets have two sides enclosed to prevent rolls from falling off while being moved. The L-S Model "M" trucks transport the pallet loads of rolls from the wrapping area to the warehouse, where the trucks high stack them in storage racks.

When materials are to be shipped

Finished products warehouse reveals an orderly, space-saving storage pattern. While main aisle is quite wide, the side aisles are just 9 ft wide.

out, a Model "M" removes a palletized load from a storage rack and transports it to the shipping dock. At the dock, the vehicle actually enters the outgoing motor highway truck to deposit its load, saving considerable handling time.

The fourth truck in use is a Lewis-Shepard JackStacker "walkie." This truck is operated from a control handle while walking along with it, thus the designation "walkie." Instead of conventional forks, the "walkie" is equipped with a ram so that it can pick up non-palletized rolls.

This truck picks rolls from the roll-up machine and places them on a 4-wheel truck, which is manually pushed a distance of 20 ft to the wrapping unit. Another job of this ram-equipped "walkie" is un-

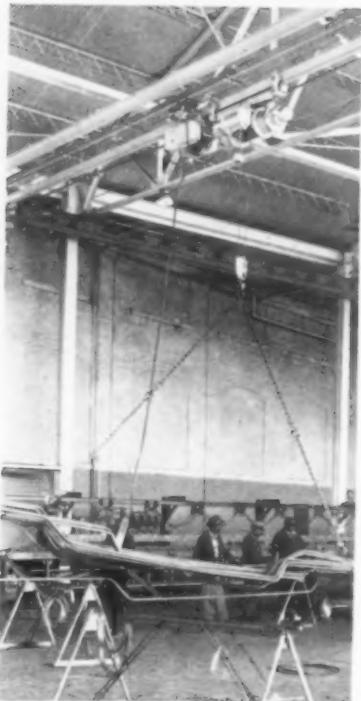
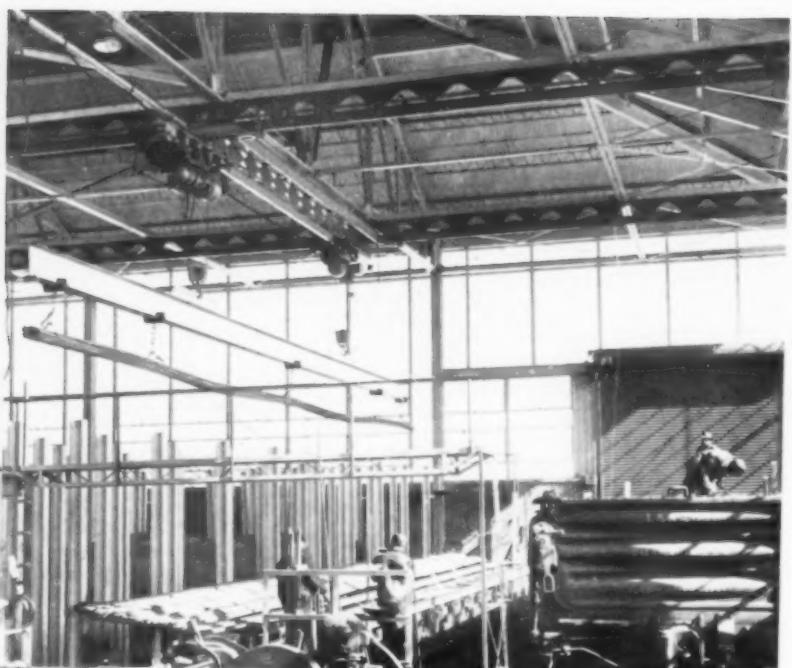
loading heavy carpet materials when received at the plant for processing.

Collins & Aikman also has a roller platform which can be attached to the truck in place of the ram. With the roller platform, various sized cartons are easily loaded or unloaded from vehicles, and the "walkie" becomes, in fact, a multi-purpose unit.

Why were electrically-powered trucks selected for the plant? "It was proved long ago that gas-powered equipment is, in the long run, more expensive than electric units," points out H. J. Kerner, Chief Engineer.

Of course, purely from a safety angle the electrics were preferable. Unlike other types of trucks, they produce no fumes or odors.





Photos show Louden crane depositing bars between upright stakes for storage and picking up shaped rods for delivery to trucks. This transfer type monorail crane equipment has made handling easier by transferring, not only from end to end but from side to side of the building.

At Atlanta, Georgia . . .

Interlocked Crane System

RATED as one of the largest bar fabricating plants in Atlanta, Georgia, The Southern GF Company has, for the past 35 years, been fabricating steel for building purposes, most of which is used in reinforcing concrete.

Louden equipment is used in the entire Fabricating Plant which is 80' wide x 260' long x 25'6" high. Two sets of Louden crane runways are installed, parallel, lengthwise in the building for 190'. On each set of runways are two single girder cranes which can be interlocked. When cranes are interlocked, movement of material by any single crane is possible over the entire length of 190' and 80' width of the building. There is also 80' of crane runways installed widthwise at the end of the building for a Louden 5-ton crane used in unloading cars and for the delivery of raw material to the storage area.

Five hoists are used in the Fabricating Plant. Two hoists at the end of the building are used

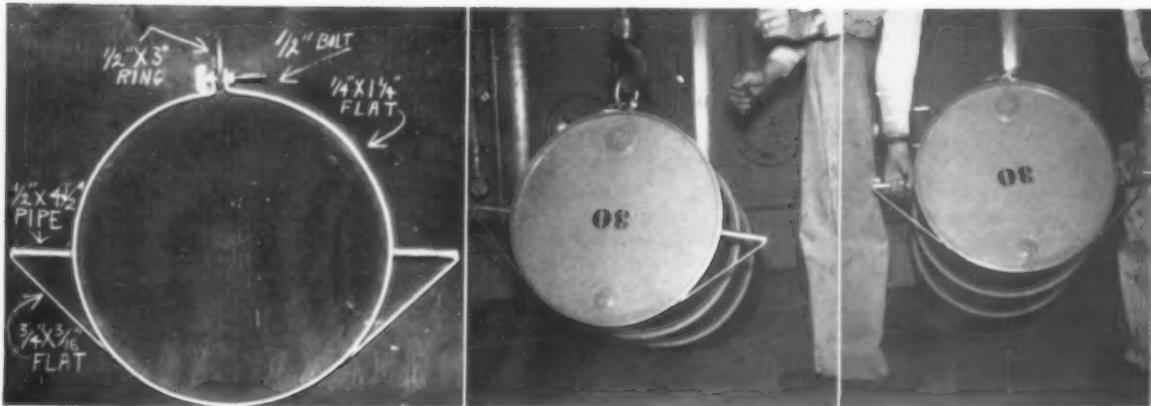
to unload material from freight cars to storage.

Hoists and trolleys are of the same capacity — three of 3,000 lb and two of 5,000 lb capacity.

One crane is used exclusively for unloading steel bars from freight cars and carrying them to the proper storage space. The bars are approximately 60' long and vary in size from $\frac{1}{4}$ " to $1\frac{1}{2}$ " in diameter. When unloaded, the bars are in a straight length. The bars are bound in bundles and are wired together in varying quantities for the varying sizes. The crane picks up whatever unit is wired together and moves this unit by itself.

On most of the cranes, cable slings of 7/16" braided cable are used. Some extension chain and hooks are also used in handling larger pieces.

The crane used for unloading cars is used continuously until such car is unloaded. This crane is also used to bring specified ma-



Device Handles Barrels

MY COMPANY has been going all out for safety, with special emphasis on prevention of back injuries. The "barrel lifter" demonstrated in the above photographs is one answer to this problem. Developed at our Woodward Station, under the direction of Chief Engineer, F. A. Flaherty, it has been found to help materially in lifting a barrel from a horizontal to a vertical position, either by manpower or mechanical lift.

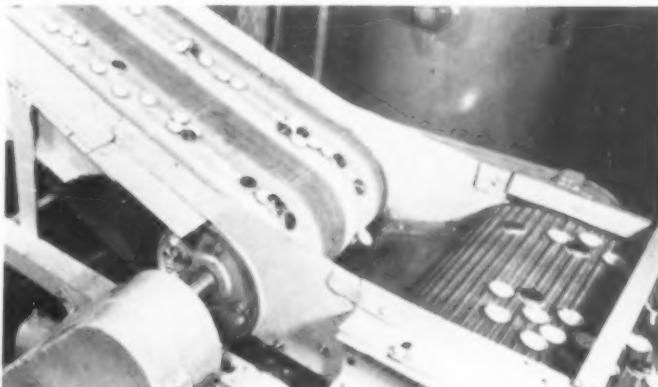
By T. H. GEORGE, Mechanical Engineer, Generation Department, Oklahoma Gas and Electric Co.

terial for a given order back to the roller bed for the shears.

The other four cranes are kept in continuous use for an 8-hour day. Lifting occurs at eight different points: car unloading when necessary, picking up material from storage place and delivering it to the shears, picking up material from shears and delivering to two benders, picking up material from two benders for transfer to storage, picking up fabricated material from two benders for transfer to trucks for immediate use, and materials picked up from four different storage places for delivery to shears.

All equipment is motor operated. The material is too heavy to handle with hand-operated equipment. MotoVeyors provide the necessary speed in handling. The Southern GF Company has two full-time crane operators and two part-time operators with other duties.

Transfer type monorail crane equipment has made handling easier by transferring, not only from end to end of the building, but also from side to side; and can, further, load trucks direct from the benders. Floor space and storage area remain the same but can be put to better use, due to the fact that they can now move materials to any part of the plant.

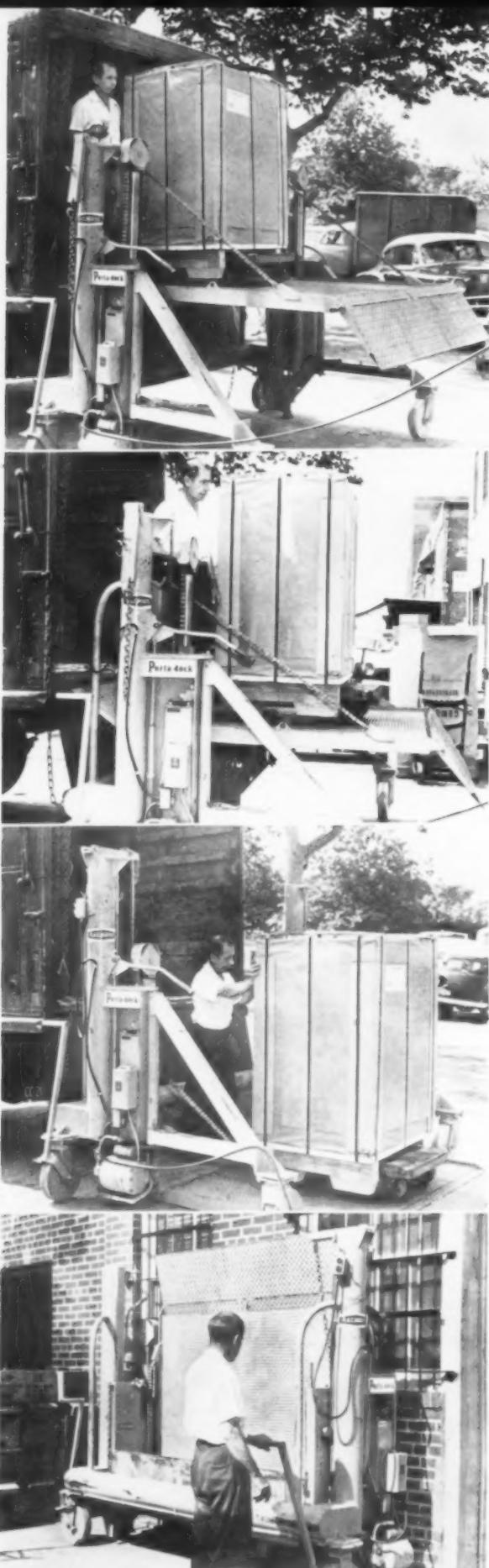


At Wilmington, Del. . . .

Magnetic Pick-Up & Delivery

PHOTOGRAPHED at Continental Can Company's White Cap & Bond Crown Division, Wilmington, Delaware, this installation of an Eriez non-electric magnetic pulley (left center) is shown serving several important functions simultaneously.

As the metal caps reach the end of the mesh conveyor, at right, they slide down an apron to be instantly picked up by the powerful magnetic fields of the Alnico V elements encased within the Eriez pulley. These elements are so arranged as to align the caps in two neat rows which are conveyed by the belt to be automatically counted and packaged. Note, however, that the caps are snatched across a small gap at the bottom of the apron, through which any non-magnetic particles may drop freely, insuring that nothing but the caps reaches the final packaging operation.



At Washington, D. C. . . .

PORTABLE DOCK

SKID loads of cut paper weighing 1500 to 4000 lb each are received at Craftsman Press, Washington, D. C. on motor trucks for sidewalk delivery. Skids were moved out of the truck on hand lift trucks and rolled down a steep 15 ft ramp to the sidewalk and into the building. Four men were needed to ease the heavy loads down the ramp, but occasionally loads would get away from them and crash into the plant wall damaging paper. System presented safety hazards, was slow and trucks were held up for four or five hours. Accumulated skid loads on sidewalk impeded pedestrian traffic.

A Raymond Corporation 6000 lb capacity Porta-dock was purchased to replace the ramp. When over-the-road trucks back up to the curb with skid loads of cut paper, one man rolls the folded Porta-dock into position and opens it up for use. With a skid lift truck, he rides the platform to truck bed height, picks up a skid load, transfers it to the Porta-dock platform and lowers the platform to sidewalk level controlling the movement by a push button hand switch on a flexible cord.

When the platform is lowered, the load is rolled to the sidewalk and deposited. The operator then elevates the dock for a second load and continues in this manner until the truck is empty. A second worker with a hand lift truck takes the skid loads into the storage area.

Benefits — On an investment of \$4,585 this Raymond Porta-dock is providing a direct saving of \$5,200 each year. Unit paid for itself in eight months and Craftsman Press is now enjoying a direct saving of \$433 a month.

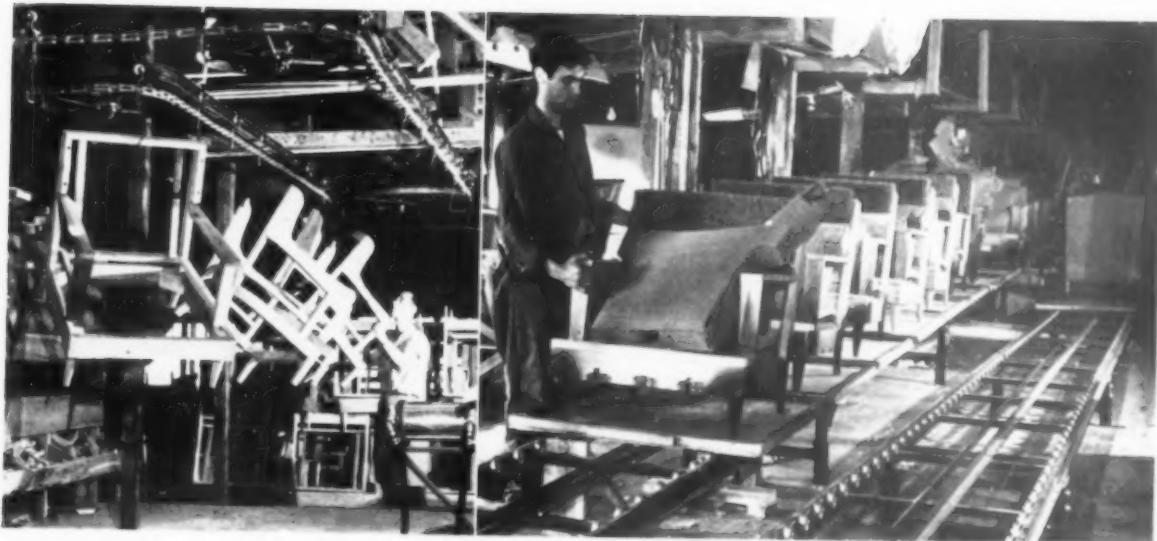
Indirect benefits include a \$200 annual reduction in compensation insurance premium, no more damaged paper rolls, better housekeeping and better public relations with trucking companies and neighboring businesses because of faster unloading.

Porta-dock elevates to truck bed height so that heavy skid loads of cut paper can be unloaded by one man using a skid lift truck.

Remote push button control lets operator control the lowering and ride down with the load.

In lowered position the load is rolled off the Porta-dock and into the door of storage room.

When not in use the portable dock is folded and stored alongside the building.



At Conover, North Carolina . . .

Overhead CONVEYORS . . . Guided PALLETS

SAVINGS up to 50% in some departments and a 20% increase in production have been realized by the Conover Chair Co., Conover, N. C., since the installation of a Rapids-Standard conveying system.

Formerly, work-in-process had to be carried, manually, from work-station to work-station. A great amount of production time was lost.

A section of Rapistan-Keystone overhead conveyor, 400 ft long, was teamed with two guided pallet conveyor systems, one 236 ft long and the other 170 ft in length.

The time and money-saving system applies to Conover in this way. After construction in the assembly department, the chair frames are placed on the overhead conveyor and moved along to the storage department where they are banked according to style number. In filling an order, the desired chairs are taken from storage, placed again on the R-K overhead, and moved to the finishing department where they are sprayed, sanded and lacquered.

The frames are then placed on the 170 ft length of Rapistan guided pallet conveyor and moved along to the spring insertion de-



Assembled chair frames from stock room are placed on overhead conveyor and moved to finishing department. They are then sprayed, sanded and lacquered. As each process is finished, frames are placed on the 170 ft length of Rapistan guided pallet conveyor. Spray has a chance to dry as frames move steadily to the "spring-up" man who inserts the chair springs.

Chair is manually moved to third conveyor at feeding point where all materials which will cover the chairs are made ready. Chair frames (with materials) are then placed on conveyor and moved along to upholsterers, to trimmers and finally to wrapping station, where completed chair is taken off conveyor, wrapped or cartoned prior to movement to shipping department.

partment. After the springs have been placed, the chair is manually moved to the third conveyor and there, along with all the materials which will cover the chair, is conveyed to the upholsterers, then to the trimmers and finally to the wrapping station.

Since the installation, the finishing department has realized a 50% savings through lower operating costs. The daily output has been upped from 125 units to 150 units and, due to the company's piece-work policy, a 20% pay increase has come about.

At Port Arthur, Texas . . .

Truck Loads Hopper in Hazardous Area

A COMBINATION of corrosive fumes from hydrochloric acid vapors and aluminum chloride, which is used as a catalyst in the production of ethylbenzene, created a difficult handling problem at the Port Arthur, Texas plant of Koppers Company, Inc.

This electric truck fitted with special anti-kick-back drum handling device, turned a disagreeable job for two men into an easy job for one man. Equipment is in a Class I Group D explosion hazardous area and working space is very limited.

ALUMINUM chloride in granular form is fed into the process continuously from a sealed hopper. These hoppers are refilled with aluminum chloride daily through a top opening from drums containing approximately 650 lb each. To feed the hopper the drum lid is replaced with a transition piece so sized as to mate with the hopper manhead and fitted with a slide gate to contain the contents when the drum is inverted.

With the transition piece attached to the drum, the drum is elevated, inverted and positioned over the hopper manhead. The slide gate is then opened and the drum contents are dumped into hopper. In the photo, the operator is releasing the manhead on the hopper prior to lowering the drum into the dumping position.

Previously this operation required two men using a hand-powered and hand-moved barrel handling machine. Due to the roughness of the floor, which is acid-proof brick, the weight of the full drum, the various hand

wheels, ratchets, etc., positioning the drum safely was hard and disagreeable work.

A Revolvator Go-Getter Electric Liftruck powered for both traction and lift and fitted with a special drum dumping device which incorporates an anti-kick-back device to keep the drum under the operator's constant control now makes what was a very disagreeable job for two men a rather simple task for one man. The hoppers are located in a Class I Group D explosion hazardous area and the working space is very limited. The area and the truck are subjected to hydrochloric acid vapors and aluminum chloride dust during the dumping operation to the extent that Koppers coated all surfaces of the Revolvator Go-Getter with Koppers Bitumastic paint to protect it from these very corrosive vapors.

New Loading Method

Present method is for the operator to drive the Go-Getter in position so that the base arms



straddle the drum, the drum is clamped in the dumping mechanism, elevated above the floor and transported to the manhead of the hopper. The drum is elevated and rotated so that the transition head which replaces the original drum lid is down and the slide gate is kept closed to retain the contents of the drum.

Then the manhead is removed from the hopper and truck again under its own power is accurately positioned so that the mating parts of the manhead and transition piece on the drum are accurately positioned. The slide gate is then opened to permit contents of the drum to pour into the hopper thereby charging the hopper.

The limited working area requires that the Go-Getter be extremely maneuverable, and the rough floors and corrosive vapor and dusty atmosphere involved require ruggedness. The dual drive wheels provide even traction and excellent maneuverability even on the rough acid-proof brick floors.

North Carolina . . .

Handling Hot Lime

SINCE the consumption of hot lime at pulp and paper mills is in direct proportion to the production of pulp, a resulting consequence of expanded plant capacities has been a sizeable increase in lime consumption.

Previously the tendency was to handle hot lime from the kiln direct to the slaker tanks. As facilities for greater capacity became available, an irregular, surge flow developed which rendered this relatively simple method inadequate. The solution appeared to be the installation of large surge bins to hold the hot lime from the kilns and, in some instances, to hold new pebbled lime from the box cars.

Bucket Elevator — In one southern paper mill the job involved the installation of a bucket elevator utilizing 12" x 7" malleable iron buckets on C-102 B Super-mal chain. This chain gives about two years service on a 24 hour day operation.

The lime entering the elevator is estimated at a temperature of 1000 F. The elevators are about 70' to 90' vertical centers. The 12" x 7" malleable buckets are being used even for capacities down to 10 tons per hour. With this light load it is believed that there is less heat warpage as well as less heat transmitted to the chain and casing.

This hot lime is not abrasive. However, there is a tendency for the dust to work into the chain joints and freeze when the elevator is shut down. For this reason, we recommended running the elevator for a period of time after the flow of hot lime had been cut off.

Design Data — Roller bearing pillow blocks are used on the head shaft with oversize shafting. Counter-weighted boot take-ups with plain iron bearings were specified because of their resistance to heat. These counter-

weighted take-ups are essential because of the expansion and contraction of the chain on an intermittent operation where cooled make-up lime is fed and reduces the temperature.

The boot section of the casing is made of $\frac{1}{4}$ " plate as warpage is a problem here. The next section is 3/16" plate and the rest of the elevator is standard 10 gauge. Over-size drives were installed to combat the possibility of a surge load to the elevator as a result of a ring breaking in the kiln. A grizzly bar assembly at the kiln discharge passes any 4" and under material to the elevator. Oversize lime has been crushed in special hot lime crushers or with manual labor. Vibrating feeders feed the hot lime at a temperature of 600 to 800 F from the surge bin.

At installations where drag conveyors were specified, C-132 chain with an 8" channel flight about 16" or 18" long carrying on the

bottom strand of the conveyor was used. The high flight keeps the chain from being buried in the lime which is about 1800 F at the kiln discharge. The use of water jackets on the bottom of these troughs is optional.

Similar installations have been engineered in a number of southern pulp mills. The only change, excepting modifications peculiar to the individual plant's needs, has been the substitution of steel knuckle chain for the malleable chain in the elevator.

Maintenance costs on this conveyor equipment have been exceedingly low considering the operating temperatures involved. The net result accrued from elevator installations as described has been an even flow of hot lime, unencumbered by surge loads, and a subsequently more efficient, productive over-all operation.

By J. R. BRISLEY, Raleigh District Manager, The Jeffrey Manufacturing Company.



At Memphis, Tennessee . . .

Safety and Maneuverability

WHEN Pidgeon-Thomas Iron Co. of Memphis needed a crane for inside and outside plant operation, it selected this Coles cantilever boom, 8-ton model. Crane is extensively used in its structural and fabricated steel department where many heavy, bundlesome loads are moved. In the warehouse department it handles all types of bar, channel iron, I-beams, plates, etc. The crane has a low overall height, power-assist steering, power brakes and is powered by a gas-electric unit using no clutches. It slews in a continuous 360 degree circle.

At Marrero, Louisiana . . .

Tilt Top Lift Feeds Machine

HANDLING problem at the Celotex Corp. plant at Marrero, La., was feeding materials into the elevated end of a chain drag leading to a pulping machine for manufacturing composition board.

How a platform "Oilift" (Globe Hoist Co.) solved this problem is illustrated.

The character of the load lifted and discharged to the chain drag is varied in size and shape. It is placed on the platform by fork lift trucks, raised a distance of 10' 6" and dumped over the top of a steel wall where a chain drag conveys it to a water tank and "chopper." The chopped-up and processed bagasse is manufactured into wall boards, acoustical boards and other Celotex end products.

Equipment Design — The Globe Hoist Co.'s platform "Oilift" installation consists of a 4' 4" x 10" platform and separate tilt platform. Edge of the tilt section is hinged to the main platform frame.

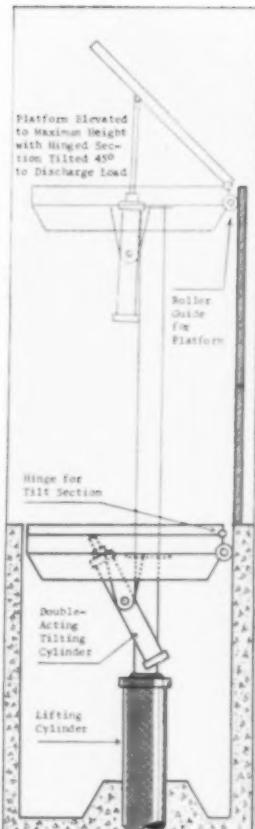
A double-acting tilt cylinder with a 2-13/16" diameter plunger is trunnion-connected to the platform assembly. In tilting the platform to the required 45° angle, this double-acting cylinder tilts on its swivel mounting. Power is used both to discharge the load and to return the platform to its loading position.

Lifting capacity is 6,000 lb. The platform rises a total distance of 10' 6" at an up-travel speed of 11.5 fpm — down speed of 19 fpm.

Because this Platform "Oilift" is located immediately beside a high steel wall, rollers are provided at the edge of the platform to guide it during the rising or lowering cycle.

Power is provided by a Globe electric oil pump operated by a 7 1/2 hp, 1200 rpm motor.

There are two sets of controls. The operator can control the lift either from an elevated balcony near the top of the processing tank



Power is applied to trunnion-mounted tilt cylinder and hinged section of platform tips 45° to

dump load. Two heavy skid-loads of materials will be dumped into the pulper tank.

or at ground level. Pushbutton stations control both the rising and lowering action of the platform and the tilting motion of the hinged section.

Photo shows how the platform

travels up against the steel wall to the chain drag. Trunnion-mounted tilt cylinder may be seen underneath the platform. It is connected to the hydraulic power system by flexible hoses.

55 MATERIALS HANDLING Ideas & Methods

19 New Product Briefs — Pages 72-79

36 Catalogs & Bulletins — Pages 85-87

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use SPI Reader Service ----- Page 81

what are your needs for REMOTE LIQUID LEVEL INDICATION?



Boiler water levels and other liquid levels requiring remote indication can be handled completely by a Yarway system.

Heart of the system is the Yarway Remote Liquid Level Indicator that gives instant, accurate readings because the mechanism is operated by the boiler water or other liquid itself. The pointer mechanism is never under pressure. Clear, "wide vision" face permits easy readings from any angle.

The Yarway Indicator conforms with A.S.M.E. Boiler Code Committee ruling (Case #1155) permitting two independent remote level indicators of compensated manometric type to replace one of two required gage glasses for boiler pressures 900 psi and above.

Electronic Secondary Indicators can be added at any point in the plant. Remote Hi-Lo Alarm Signals (lights and/or horns) can be connected for additional safety.

Primary indicators fully compensated for every pressure change in boiler also available.

For permanent record of changing levels, the Yarway Hi-Lo-Graph Recorder can be furnished.

Over 12,000 Yarway Remote Indicators have already been installed. For full details, write for Yarway Bulletin WG-1824.

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for completely accurate indication under every boiler operating condition.

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To supply additional indication at any point without pressure connections.

REMOTE SIGNALS



Hi-Lo Alarms,
Lights and/or
Horns.

RECORDER

To provide permanent 24-hour record of liquid levels.



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... a good way to specify
remote liquid level indicators

Plant tested lighting system . . .

sealed hi-bay Mercury Vapor Fixtures

How new system in Texas plant cuts maintenance and gives better light at lower cost.

HIS TITLE at the Mosher Steel Company plant in Houston, Texas, is Maintenance Engineer, but the term "maintenance" doesn't begin to describe his activities. A better description would be "problem solver."

Martin B. Hill, Jr., is known to everyone as Buster. His "solutions" are everywhere in the giant plant.

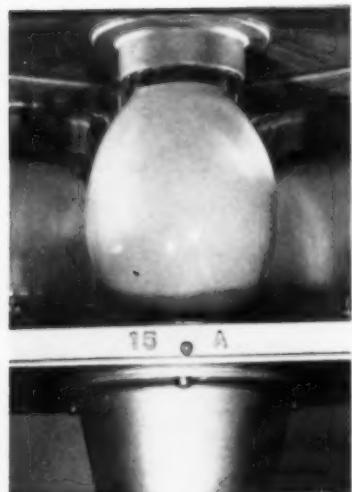
Not the least of these solutions is Buster's use of new Wide-Lite hi-bay lights equipped with color-corrected mercury vapor lamps to solve lighting problems in a giant new bay devoted to fabrication of large structural components. Today it is the best-lighted bay in the entire plant, having twice the foot-candle level of the next best and consuming less power.

The new bay is 78 ft x 360 ft. Vertically, the working space is unobstructed to a height of 40 ft.

To avoid interfering with production, lighting must be hung at a minimum height of 38 ft. The massiveness of the area and the working height presented difficulties enough, but Buster's problems didn't end there.

Maintenance Troubles — Keeping reflector and lamp surfaces clean was another unsolved problem. Dust from the Mosher operation tends to adhere to conventional reflectors and incandescent lamps. A regular cleaning program, attempted in other bays, proved far too costly, chiefly because production equipment was put out of service during the cleaning operation.

Maintenance and lamp replacement presented still another problem. Vibration had resulted in frequent lamp failure in bays of comparable size where incandescent systems are used. The height



Close-up of the Wide-Lite shows the patented "Stabilux Socket" which secures the bulb end of the color-corrected mercury vapor lamp, eliminating lamp rupture and breakage from vibration.

Maintenance Engineer Martin B. (Buster) Hill, Jr., demonstrates the ease with which Wide-Lites can be cleaned by a workman riding one of the 78 x 360 ft bay's two 15-ton cranes.

at which the units were positioned made frequent, one-lamp replacements costly.

Sealed Unit Test — As "problem solver" in a plant with five acres of covered floor space, lighting worries were not new to Buster. Several years before, he had begun experimenting with color-corrected mercury vapor lamps. He found that poor heat dissipation in conventional fixtures shortened lamp life to the point that they were not practical. Then he investigated the relatively new Wide-Lite, engineered especially for use with color-corrected mercury lamps by the Wide-Lite Corporation of Houston.

Among the Wide-Lite models was a completely weather-sealed unit designed for a 1,000-watt, color-corrected mercury vapor

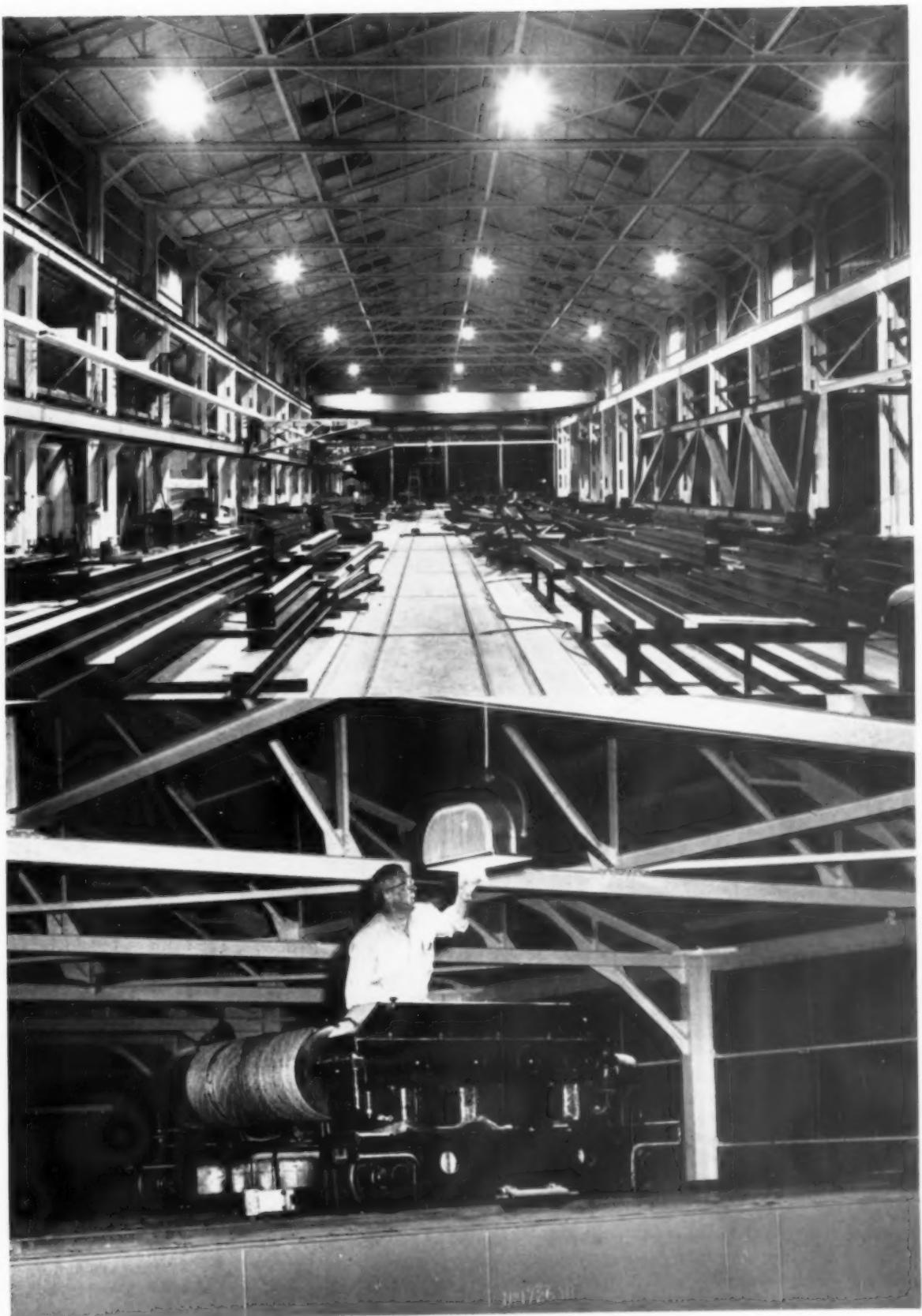
OLD BAY

34, 500-watt
incandescents
110 volts
3.5 to 7.5
27 kilowatts
per hour
15 feet
557,000

LAMPS
CURRENT
FOOT CANDLES
POWER CONSUMPTION
MOUNTING HEIGHT
INITIAL LUMENS

NEW BAY

18, 1000-watt
Wide-Lites
440 volts
12 to 15
18.9 kilowatts
per hour
38 feet
1,080,000



lamp with a rated life of 6,000 to 12,000 hours, depending upon the frequency of starts. Lamps could be replaced quickly without disturbing the weather seal. Fins on the Wide-Lite's aluminum housing increased heat dissipating surface area to 2,365 sq in., making possible an operational temperature 150 degrees lower than with conventional lamp enclosures.

On paper, it seemed Wide-Lites would solve his problems, but Buster isn't one to take chances. He had two units installed at a height of 38 ft in an existing bay. That was 18 months ago. Purposefully, he made no attempt to clean or otherwise service the fixtures.

These two Wide-Lites today are still burning, reflectors are clean, and no lamp change has been necessary!

That proved it. The sealed unit

would end the dirt problem, and the long lamp-life combined with the ease of replacement would solve maintenance worries. Vibration trouble would disappear, too, with Wide-Lite's built-in lamp stability. The protrusion on the bulb end of the lamp fits into and is secured by the patented "Stabili-lux Socket," and the other end, of course, is secured by the electrical socket.

New Installation — The new bay's 18 Wide-Lites provide 12 to 15 foot-candles of illumination evenly distributed over the 28,080 sq ft of work area. One 440-volt circuit would have sufficed for the entire system, but two are used so that two Wide-Lites can be burned separately as protective night lights. Power requirement is only 18.9 kilowatts.

The plant's second best lighted work bay is slightly smaller than the new one. The lighting system

in the old bay is 10 years old and has suffered through deterioration of reflector surfaces. Illumination varies from a low of 3.5 to a high of 7.5 foot-candles. To secure this, 54 incandescent lamps of 500 watts each are hung in conventional reflectors just 15 ft from the floor. Power requirement for lighting in this bay, using several 110-volt circuits, is 27 kilowatts.

The broad, overlapping patterns of the Wide-Lites provide even illumination, eliminating harsh shadows and peaks and valleys of light.

Already, Mosher Steel has decided upon further use of Wide-Lites. They will be used to light a 60 ft, heavy-work section of an existing bay which is currently illuminated with 11, 750-watt incandescent lamps.

Seven 1000-watt Wide-Lites will replace the incandescents, and will more than double illumination.

Heater Stops Screen Blinding

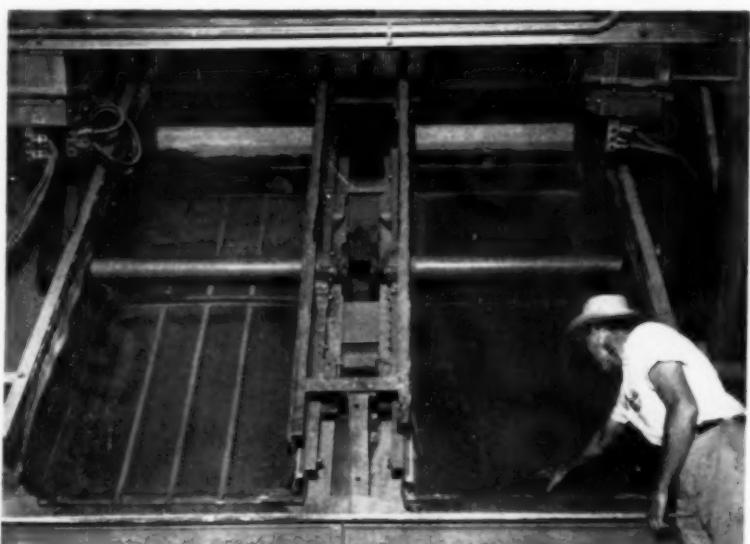
EFFECTIVENESS

of electric screen heaters in preventing a vibrating screen from blinding is shown dramatically by the accompanying photograph made at the plant of Chattahoochee Brick Company in Atlanta.

Eight Link-Belt vibrating screens are employed at this plant in two banks of four screens each. The first group was installed about three years ago, and the second group has been in operation for about a year. Each screen is equipped with an electric heater with 15-kva transformer.

Clay for brick making, with moisture content varying from 10 to 25 per cent, is delivered by belt conveyors to the vibrating screens. About half of this clay passes through the screen and goes to the brick machines. The other half goes over the screens, is conveyed to a grinder and is then recirculated to the screens.

To test the effectiveness of the electric heaters, one of the heat-



To test the effectiveness of the electric heaters, the heater on the screen at right was shut off, while the screen continued to operate. The blinding shown occurred within ten minutes. The screen blinds almost immediately when fed clay of higher moisture content.

ers was turned off, and the belt conveyors and screens were kept operating. Even though the material was of exceptionally low moisture content on the day of the

test (approximately 10 per cent), after a period of only ten minutes the screen, with the heater turned off, was clogged as shown in the photograph. The other screen, on

which the heater was permitted to continue running, was completely clear.

By using heaters, these screens are able to maintain their full effectiveness hour after hour without shutdown. When the pictures were made, the screens were equipped with 8-mesh stainless steel cloth. At present they are using 10-mesh screens, and the heaters are proving effectiveness even more.

According to John S. Winn of Chattahoochee Brick Company, this demonstration is even more dramatic when the moisture content runs as high as 20 per cent. Then, when the heater is turned off, the screen blinks within a matter of seconds.

Storing Coal

WHEN storing coal outside that is to be used later with pulverized coal installations, it is wise to start some sort of vegetation around the storage coal. There are cases where it might be better to roll and pack the earth and then spray the area with road tar or asphalt.

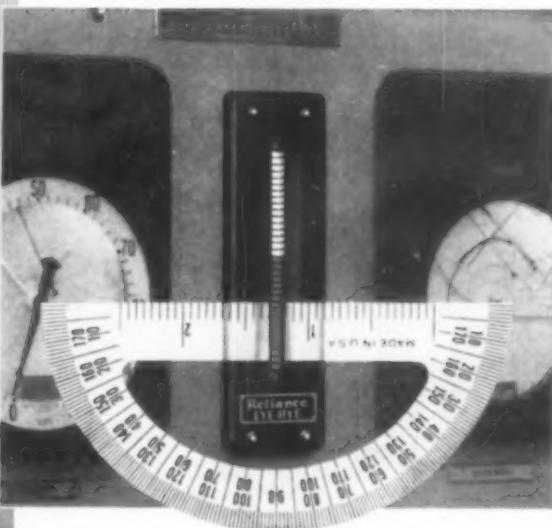
In one instance, the hammers of a new pulverizing mill were found to be excessively worn after only 2,800 tons of pulverization. Examination of the coal at the mill showed that some samples contained as much as 2 to 3% sand. Since the coal had been stored on a sandy area, the contamination had been brought about by the wind and probably some by carelessness in using the bulldozer.

After a portion of the area had been packed and treated with asphalt and some vegetation started in other places, a new set of hammers was found to be in excellent condition after more than 8,000 tons of consumption of the same coal, and not contaminated with sand.

By U. B. YEAGER, Fuel Engineer, Island Creek Coal Sales Company, Huntington, West Virginia.



New Reliance EYE-HYE gives you 180° reading of boiler water levels



Bright green-white image clearly visible all around your control room

Wherever you stand in front of your panel — even 90° from center, either side — you can read the picture in EYE-HYE's new protruding window. The brightly illuminated green indicating fluid that spells "water" contrasts sharply with the upper white (steam) section. A new lighting principle brings extra carrying power to the image.

There's no change in the dependable manometric gage principle of operation. EYE-HYE still retains its original simplicity, successful for over 20 years. Thousands of operators prefer the familiar liquid column indication, as in conventional water gages . . . Models are available for any working pressure up to 2500 psi. Write for catalog information — mention your pressure.

The Reliance Gauge Column Co.
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Having Carryover Troubles



This article by J. S. BEECHER, Chief Chemist for E. F. Drew & Co.

Inc., should help you to find the cause and develop effective control

IMPURITIES may be present in steam for several reasons:

1. Carryover of oxygen or carbon dioxide.
2. Employment of a steam and return line corrosion control chemical.
3. "Volatilization" of silica from boiler water.
4. Use of water containing impurities for desuperheating.
5. Carryover of boiler water.

Oxygen

When boiler feedwater is properly mechanically deaerated and a chemical such as sodium sulfite is added continuously to remove traces of dissolved oxygen from the mechanically deaerated feedwater, the steam produced by a boiler should be free of oxygen. If oxygen free steam is not produced, after-boiler corrosion can be a problem.

Air may leak into the condensate section of the after-boiler section, especially when a return pump creating a vacuum is employed to return condensate to the preboiler section (feedwater heater, return tank, etc.), and oxygen of this air can cause corrosion.

Carbon Dioxide

With proper mechanical deaeration, boiler feedwater should not contain any free carbon dioxide. (Free carbon dioxide can be present in large concentrations in well waters.) However, mechanical deaeration will not remove any appreciable amount of carbon dioxide "bound" in compounds such as calcium bicarbonate, magnesium bicarbonate, magnesium carbonate, sodium bicarbonate and sodium carbonate which may be present in feedwater.

In the boiler, these compounds decompose to a large extent. The released carbon dioxide goes over with the steam and makes the condensed steam corrosive.

Treatment Chemicals

Where steam and return line corrosive is a problem, chemicals may be added to the preboiler section, the boiler or the after boiler section to combat the problem. Usually the treatments are added to the boiler or the after boiler section.

Volatile chemicals such as volatile amines may be added to the steam generating system at the location desired. If fed to the pre-

boiler section or boiler, the chemical will volatilize and go over with the steam. When the steam condenses, the chemical will dissolve in the condensate and react with any carbon dioxide present, thereby raising the pH value of the condensate and making it less corrosive.

Chemicals which form a nonwettable film in the steam and return line system may be employed for controlling corrosion. These chemicals have been referred to as "filming amines." Generally, the chemical used is fed to the boiler or direct to the steam and return line system. If fed to the preboiler section (least desirable location) or to the boiler, the chemical will distill and go over with the steam.

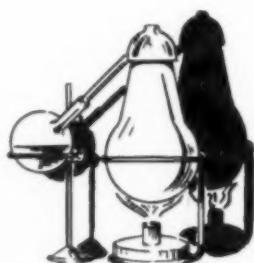
When present in the steam and condensate in a sufficient amount, the chemical will form a nonwettable film on the metal surfaces and, therefore, form a barrier between metal surfaces and steam and condensate. By this action, corrosion of the metal is prevented.

Silica

The presence of silica or silicates in steam is objectionable where the steam is employed to drive

POUNDING THE DESK WON'T HELP

Look for contaminants and maintenance errors and use the services of a competent boiler feedwater chemist



turbines since the deposit of silica in turbines can greatly lower efficiency. The condition may become serious enough to necessitate a shutdown for cleaning.

Silica may be present in steam because it "volatilizes" from the boiler water and goes over with the steam. This condition is usually confined to high pressure boilers.

The amount of silica in the steam depends upon operating pressure, type of steam purifying equipment employed, and silica concentration in the boiler water.

Low silica feedwater and adequate steam purifying equipment may be required to control the problem.

Desuperheating

In many cases where superheated steam cannot be used, superheated steam may be desuperheated by injecting water into the superheated steam line. Condensate is most desirable for desuperheating, but feedwater, softened water or some other source of low solids water may be employed.

The amount of impurities introduced into the steam with water for desuperheating depends upon the purity and the amount of desuperheating water added.

Carryover

Problems that can develop because of the presence of boiler water in steam are:

1. Damage to products where steam directly contacts the products.
2. Damage to equipment such as turbines, pumps, etc.
3. Damage to valves (erosion-corrosion; wiredrawing).
4. Damage to traps, control lines, etc.
5. Difficulty in establishing and maintaining "control tolerances" used for dosage adjustment and blowdown regulation for the steam generating system.

Mechanical or chemical conditions or a combination of the two may be responsible for boiler carryover.

Mechanical Conditions

The mechanical carryover of

boiler water is frequently referred to as "priming."

Boiler water may not be adequately separated from steam in the steam drum of a boiler operated at excessive ratings. The steam "pulls" a certain amount of boiler water from the steam drum. A constant amount of "entrainment" may occur when a boiler is continuously operated at an excessive rating. If the excessive

rating fluctuates, the amount of entrainment may fluctuate.

When a sudden demand is made for steam, the pressure in the boiler may drop slightly with the result that more than normal boiling in the boiler occurs. In such cases, boiler water is "thrown" into the steam space and carried over with the steam.

When the load drops suddenly from a high load to a low load, the

meets every requirement

the
Dean Hill
sulphur
pump

low cost operation
heavy duty construction
reliability

Like all Dean Hill products, this sulphur pump incorporates all of the features to give you years of trouble-free operation. Complete steam-jacketed line shaft and discharge column assures free flow at all times. Actual liquid sulphur lubricates bearings and shaft damping bushings. The Dean Hill sulphur pump is a compact, self-contained, rigid, smooth-running mechanism capable of superior service at all times. For complete information write today, without obligation.

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Pump and Turbine Engineers Since 1893
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SALES OFFICES IN PRINCIPAL CITIES

Pressure at Outlet of Boiler — psig	Total Solids ppm	Total Alkalinity ppm	Suspended Solids ppm
0 - 300	3500	700	300
301 - 450	3000	600	250
451 - 600	2500	500	150
601 - 750	2000	400	100
751 - 900	1500	300	60
901 - 1000	1250	250	40
1001 - 1500	1000	200	20
1501 - 2000	750	150	10
2001 & up	500	100	5

feedwater regulating system may lag in decreasing the input of feedwater with the result that the water level in the steam drum may get too high. High water level can cause carryover because then there is not sufficient steam release space in the steam drum and boiler water can be pulled over with the steam.

A defective steam separating device may permit the passage of boiler water into the steam.

Boiler design may be a factor where carryover is a problem. However this possible cause is too complex to discuss in detail. Furthermore, if boiler design is a factor, the chances are that nothing can be done about it in an existing installation.

Mechanical carryover is prevented by eliminating as much as practical the causes of the condition. These include:

1. Consider the use of an effective steam separating device in the boiler drum. Where the steam demand is in excess of the capacity of the existing steam generating equipment, consider the installation of additional equipment.
2. As far as practical, schedule the load to prevent sudden demands.
3. Maintain the water level in the boiler at the level recommended by the manufacturer.
4. Periodically inspect the steam separating device for defects.
5. Employ firing equipment to distribute heat uniformly in the boiler.

Chemical Conditions

Carryover due to chemical conditions is frequently referred to as "foaming."

Excessive amounts of certain chemicals in boiler water may be a cause for carryover.

The Standards Committee of the American Boiler and Affiliated Industries realizes this and, therefore, has taken chemical conditions into consideration in the Performance Forms section (revised 9-56) of the 1954 Manual on Industry Standards and Engineering Information.

Item 10 of the Performance Forms section contains the following recommendations for predicted or guaranteed performance of boilers:

(a) **Moisture** — No guarantee on steam quality should specify moisture less than $\frac{1}{2}$ of 1% and the boiler water concentration at respective pressures should not exceed those given in (c).

(b) **Total solids** on boilers equipped with Steam Purifiers — No prediction or guarantee of steam purity should specify total solids less than 1 ppm and the boiler water concentration at respective pressures should not exceed those given in (c).

(c) **Boiler Water Concentrations in Units with a Steam Drum.**

Item 1.5 under Conditions on the page on Standard Guaranteed Performance, Steam Generating Unit or Boiler — With or Without Water Walls (revised 9-56) in the Performance Forms section states:

Responsibility — The treatment of feedwater and the conditioning of boiler water are beyond the control of the Company. Therefore, the Company shall not be held responsible for damage due to the presence of oil, grease, scale or deposits on the internal surfaces of the equipment; or for damage resulting

from foaming caused by chemical conditions of the water; or for damage resulting from corrosion or caustic embrittlement. The Company shall not be responsible for carryover resulting from the presence of oil, grease or other foam inducing materials.

From the information supplied above, it is obvious that consideration must be given to the impurities present in boiler feedwater in order to control chemical type of carryover.

Other impurities that may be present in boiler feedwater (because of contamination) that can cause chemical type of carryover are certain types of organic wastes, detergents and other industrial wastes. These impurities may be encountered where river water, pond water, etc., are employed for makeup.

Control tolerances specified for adjusting the dosages of treating chemicals and regulating blowdown for a boiler must hold total solids, total alkalinity and suspended solids within a safe operating range. Furthermore, precautions must be taken to prevent oil or grease or any other contaminating foam inducing material from getting into the feedwater.

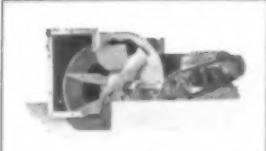
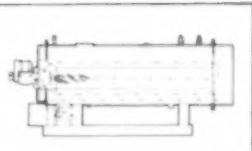
Antifoam Products

When chemical type of carryover occurs, the boiler water is usually in a "foaming" condition. Steam bubbles that are formed are surrounded by a "tough" film of boiler water and do not readily break when they reach the steam release space. The stable foam bubbles do not increase in size by joining together but stay small and increase in number.

As the number of stabilized foam bubbles increases, the amount of space in the boiler occupied by the steam bubble-water mixture increases and therefore the amount of space left in the steam drum for steam release decreases. When adequate steam release space is not available, some of the bubbles are carried over with the steam. The film of boiler water surrounding the bubbles contains the same solids as the main body of boiler

(Continued on page 60)

NOW... all these "BIG BOILER" features in a compact, economical package . . .

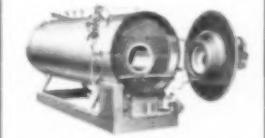
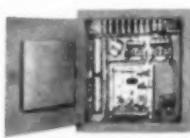


• A complete package including boiler burner, draft equipment, controls and all interconnecting piping and wiring. Completely assembled and factory fire-tested.

• 4-pass down-draft design, promotes rapid water circulation. Decreasing tube volume in successive passes provides high combustion gas velocities and maximum heat transfer.

• 5 sq. ft. of heating surface per b.h.p. Units reach conservative ratings with ease. Guaranteed thermal efficiency 80%. Stack temperatures not exceeding 125° above steam or water.

• Induced draft operating at relatively slow speed results in unusual quiet plus safety from danger of forcing gases out into boiler room. Negative furnace pressure also protects refractory.

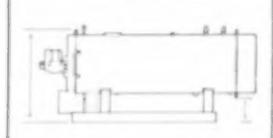


• Fully automatic operation firing oil, gas or both. Firing rate adjusts to demand, never overfiring wastefully, but handling sudden increases without lag. Variety of controls available.

• Superior Rotary Burners on all sizes firing No. 4, 5 and 6 oil. Most dependable type of equipment ever devised for burning heavy oils. Burners require minimum supervision, and no lubrication.

• Hinged front and hinged or davited rear door on all units. Doors may be opened simply without removing refractory and are simply and effectively sealed with standard asbestos rope.

• Instantaneous fuel change-over. Units equipped for oil and gas firing may be changed from one fuel to another quickly and simply by operating only a switch and a valve.



• Completely insulated and jacketed. Even the bottom of the boiler shell is covered with 2" insulation. No uninsulated areas for heat loss and unnecessary heating of the boiler room.

• Down-draft design places furnace high in shell, safely away from danger zone . . . completely eliminates bagging and blistering resulting from mud build-up in bottom of boiler.

• Constant gas pilot remains lit at all times, prevents accumulation of gas in the furnace which could result from even an almost undetectable leak in the gas valve.

• Low total height but with clearance from floor allows ample room under the shell for inspection, maintenance and installation of piping. The COMPACT is practical as well as compact.



SUPERIOR "COMPACT"

Here at last is a boiler which combines all of the most desirable features of big boiler design with an unusual degree of compactness. Ideal for installations where space is limited, it also provides an economical answer both from the standpoint of purchase and installation costs for any application having steam requirements of from 20 to 200 B.H.P.

Pressures to 250 psi, or hot water units also available. Write today for Bulletin 101C

SUPERIOR COMBUSTION INDUSTRIES INC.
TIMES TOWER, TIMES SQUARE, NEW YORK 36, N.Y.

Specialists in **PACKAGED BOILERS** . . . exclusively

*In Iron Body Wedge Gate Valves,
Outside Screw and Yoke Design,*

Walworth offers you these 8 outstanding advantages!

STRONGER CONNECTIONS. T-head disc-to-stem connection on OS&Y types permits wedge to properly seat itself.

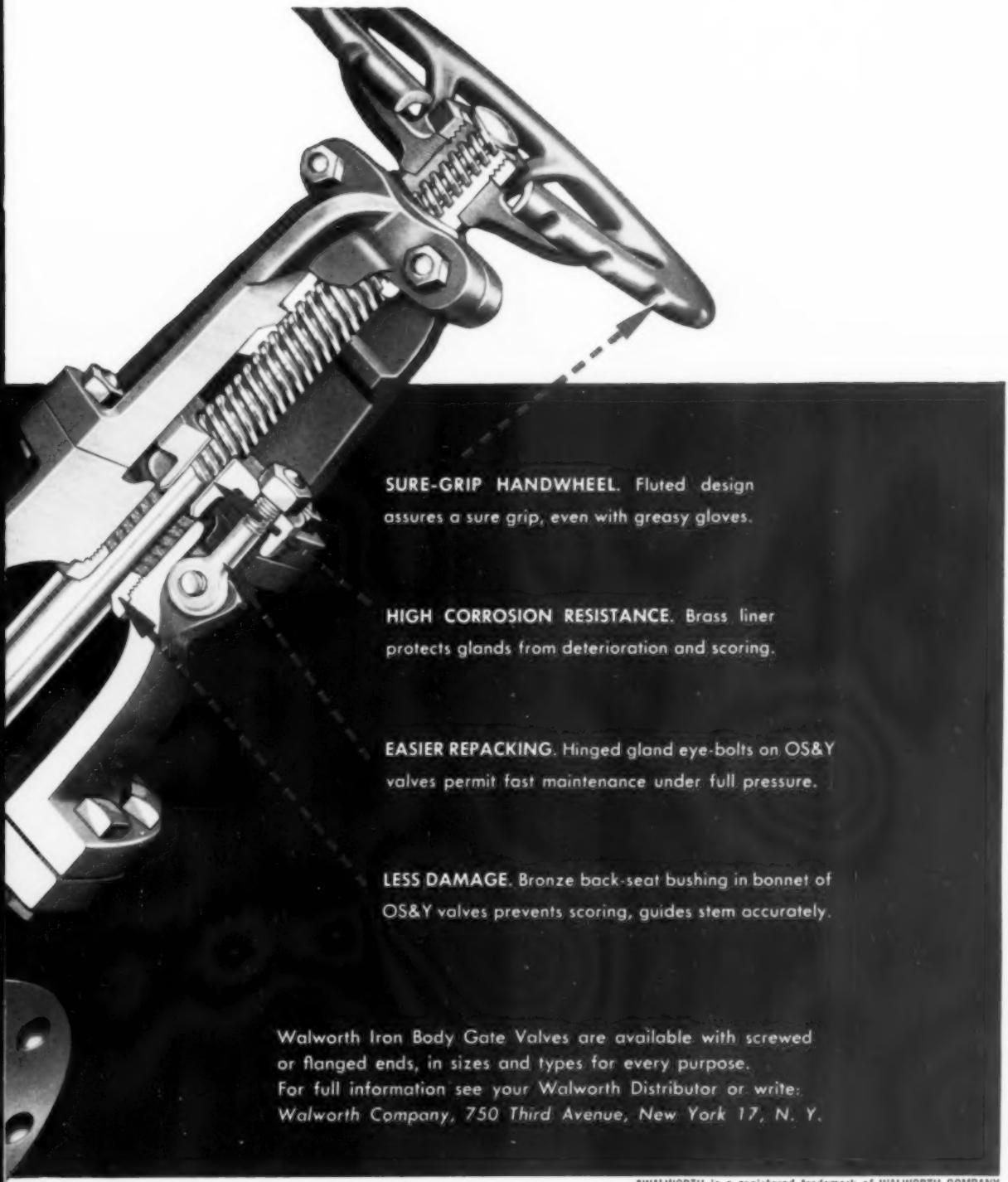
TIGHTER SEAL. Solid web type disc on OS&Y valves provides tight closure, greater strength and longer service.

REDUCED TURBULENCE. Fluid action is minimized due to this straight-flow port design.

FEWER OBSTRUCTIONS. Seat rings of bottom-seated types are screwed into body to prevent gum and grit accumulations.



Walworth Subsidiaries: ALLOY STEEL PRODUCTS CO. • CONOFLOW CORPORATION • GROVE VALVE AND REGULATOR CO.



SURE-GRIP HANDWHEEL. Fluted design assures a sure grip, even with greasy gloves.

HIGH CORROSION RESISTANCE. Brass liner protects glands from deterioration and scoring.

EASIER REPACKING. Hinged gland eye-bolts on OS&Y valves permit fast maintenance under full pressure.

LESS DAMAGE. Bronze back-seat bushing in bonnet of OS&Y valves prevents scoring, guides stem accurately.

Walworth Iron Body Gate Valves are available with screwed or flanged ends, in sizes and types for every purpose. For full information see your Walworth Distributor or write: Walworth Company, 750 Third Avenue, New York 17, N. Y.

*WALWORTH is a registered trademark of WALWORTH COMPANY



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DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

M & H VALVE & FITTINGS CO. - SOUTHWEST FABRICATING AND WELDING CO., INC. - WALWORTH COMPANY OF CANADA, LTD.

Carryover Troubles?

(Starts page 54)

water. Hence, boiler water is carried over with the steam.

Certain chemicals can be employed to destroy the foaming tendency of boiler water. These antifoam chemicals alter the physical characteristics of the boiler water in such a manner that stable foam bubbles cannot exist. When steam bubbles form, they coalesce and increase in size as they approach the steam release space in the steam drum. Upon reaching the water level in the steam drum, the big steam bubbles break and release the steam. The film of boiler water surrounding the bubbles remains with the boiler water in the drum.

To obtain the full benefits of an antifoam product at all times, the product should be fed to the

steam generating system continuously.

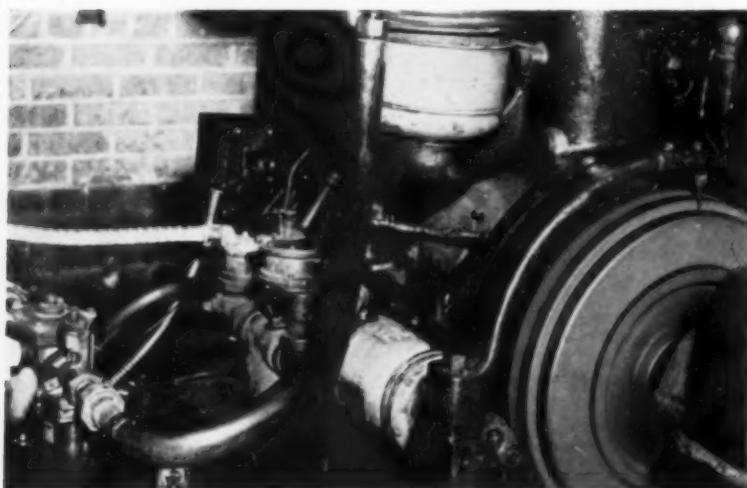
Separators and Purifiers

Many boilers are equipped with mechanical devices in the steam drum to effect, to the greatest practical extent, separation of steam from steam-water mixtures coming into the drum from steam generating tubes.

The efficiency of these mechanical devices in producing pure steam depends on their design and operation.

One of the simplest steam separating devices is a baffle such as a "deflecting" or an "end around" baffle. The device works by causing impinging steam or steam water mixtures to abruptly change direction. Boiler water being heavier than steam, is "thrown out" and the separated steam passes on.

Other steam purifiers function by changing the direction of the steam or by scrubbing the steam with feedwater or condensate.



Air Starting Motor Saves \$200 Annually

A SOUTHERN textile mill compresses the exhaust air from a Waukesha engine with an Ingersoll-Rand Type 20, 2-stage compressor to 300 psi, and uses this inert gas to pump chemicals in

the rayon process. Since the engine and compressor have a direct drive with no coupling, the engine is difficult to start.

Having experienced trouble with an electric starter, which had produced maintenance problems and high upkeep costs, the mill put in an Ingersoll-Rand Size 5BM Air Starting Motor and a Norgren vitalizer unit. They also

purchased a solenoid valve to activate the starting motor automatically.

The mill management figures that substitution of the air starter for the electric starter has provided an annual saving of \$200. This represents the elimination of \$75 for electric generator and starter maintenance, the elimination of \$25 for replacement of batteries, and the reduction of \$100 in labor costs. Additional savings resulted from a reduction of excessive downtime.



No Back Sliding

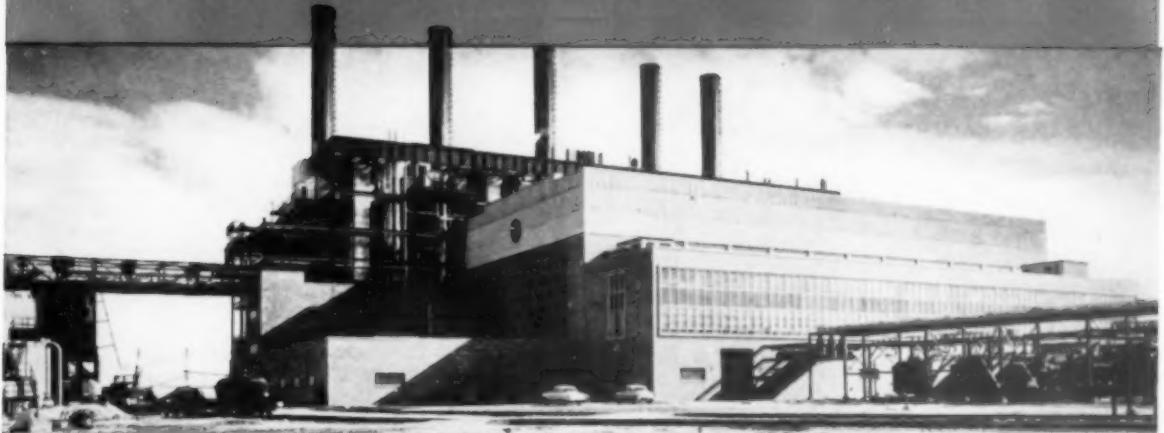
BY MINIMIZING the back sliding of material on a sloping belt, Chandler Materials Company of Tulsa, Oklahoma, not only eliminated a production bottleneck but greatly increased belt tonnage.

Chandler's Superintendent, Mr. Melange, was having difficulty conveying a fine limestone sand in a slurry. Belt slope was 22½° and the material kept sliding back. To overcome this, he obtained No. 81 Rema Cleats — $\frac{1}{8}$ " high, 12" long — from his Tulsa industrial supply distributor (The Unlaub Co.) and applied them across the belt on 4 ft centers.

The belt previously carried about 250 tons of material in a 9 hour day. Now it is averaging around 485 tons for the same period.

The rubber cleats were applied by the Rema Self Vulcanizing Process (Flexible Steel Lacing Co.) without heat or cumbersome equipment.

FIRST MAIN STEAM LINE OF TYPE 316 STAINLESS



Linden Generating Station of Public Service Electric and Gas Company of New Jersey, where the first main steam line of Type 316 has been in service, on Unit No. 2, since December, 1957.

One of Kellogg's Many Power Piping Firsts

Public Service Electric and Gas Company's Linden Generating Station is the first utility plant to use Type 316 stainless steel for a main steam line. Installed in Unit No. 2, with throttle conditions of 2350 psi and 1100 F., this alloy piping is 11 $\frac{1}{2}$ in. O.D. x 1 $\frac{1}{16}$ in. minimum wall thickness. The M. W. Kellogg Company fabricated this and other critical systems for this unit.

Kellogg's long list of "firsts" in power piping fabrication is due largely to its continuing studies in search for new alloys and new fabricating techniques which will permit industry to achieve still higher operating efficiencies. Kellogg is now working with Public Service of New Jersey on the main steam and other critical lines at Bergen and Mercer generating stations, utilizing austenitic and ferritic alloys.

Kellogg welcomes the opportunity to discuss its complete power piping design, fabrication, and erection facilities with consulting engineers, engineers of power generating companies, and manufacturers of boilers, turbines, and auxiliary equipment.

Fabricated Products Sales Division

THE M.W. KELLOGG COMPANY, 711 THIRD AVENUE, NEW YORK 17, N.Y.

A SUBSIDIARY OF PULLMAN INCORPORATED

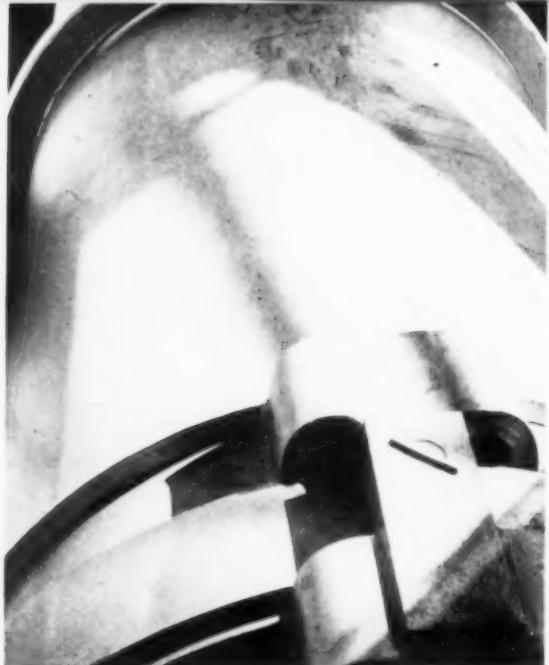
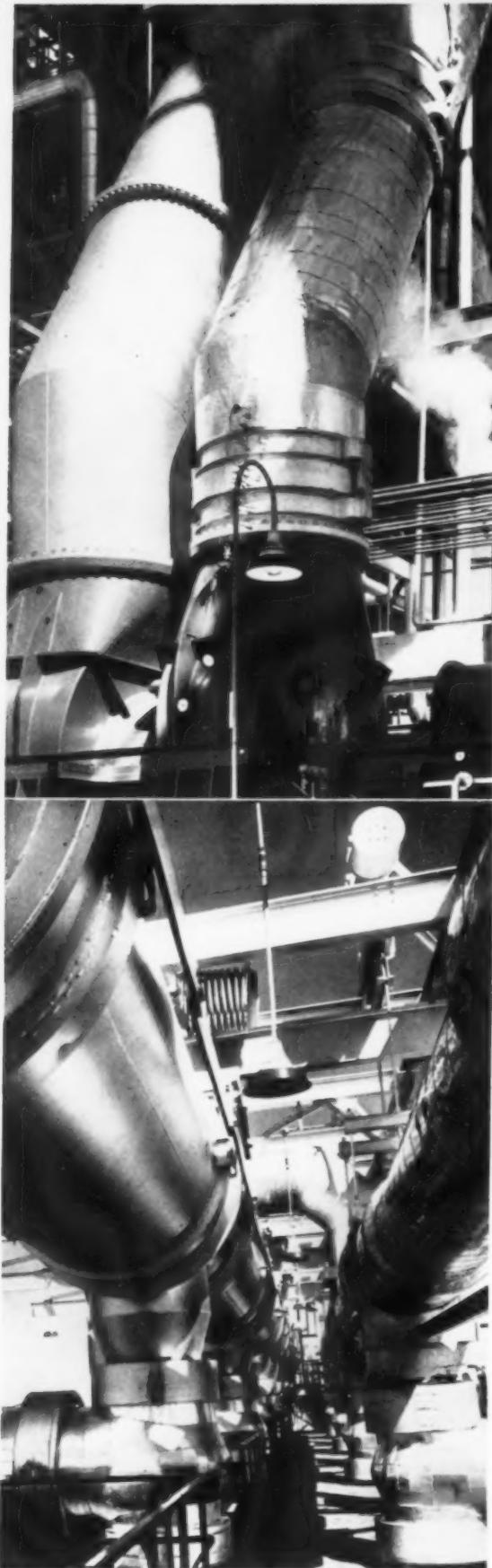
The Canadian Kellogg Co., Ltd., Toronto • Kellogg International Corp., London • Kellogg Pan American Corp., New York • Socete Kellogg, Paris • Companhia Kellogg Brasileira, Rio de Janeiro • Compania Kellogg de Venezuela, Caracas

FIRST IN FABRICATION OF:

- Piping from C. 1 $\frac{1}{2}$ % Mo.
- Station piping for 900 F.
- Station piping for 950 F.
- Station piping for 2200 psi.
- C. 1 $\frac{1}{2}$ % Mo. piping with #3-#5 actual grain size
 - 1 $\frac{1}{4}$ % Cr.-1 $\frac{1}{2}$ % Mo. steam piping
 - Steam piping for 1000 F.
 - 1 $\frac{1}{4}$ % Cr.-1 $\frac{1}{2}$ % Mo. station piping
 - 2% Cr.-1 $\frac{1}{2}$ % Mo. station piping
 - Station piping for 1000 F.
 - 2 $\frac{1}{4}$ % Cr.-1% Mo. station piping
 - Station piping for 1050 F.
 - 3% Cr.-1% Mo. station piping
 - Type 347 stainless turbine piping
 - Mercury vapor piping for 1000 F.
 - Station piping for 1003 F. for France
 - Type 347 stainless station piping
 - Station piping for 1100 F.
 - Type 316 stainless station piping
 - Type 316 stainless station piping for 3500 psi-1050 F., 325 MW.
 - Type 316 stainless station piping for 5600 psi-1200 F., 325 MW.



POWER PIPING—THE VITAL LINK



Orange, Texas . . .

EXPANSION JOINTS

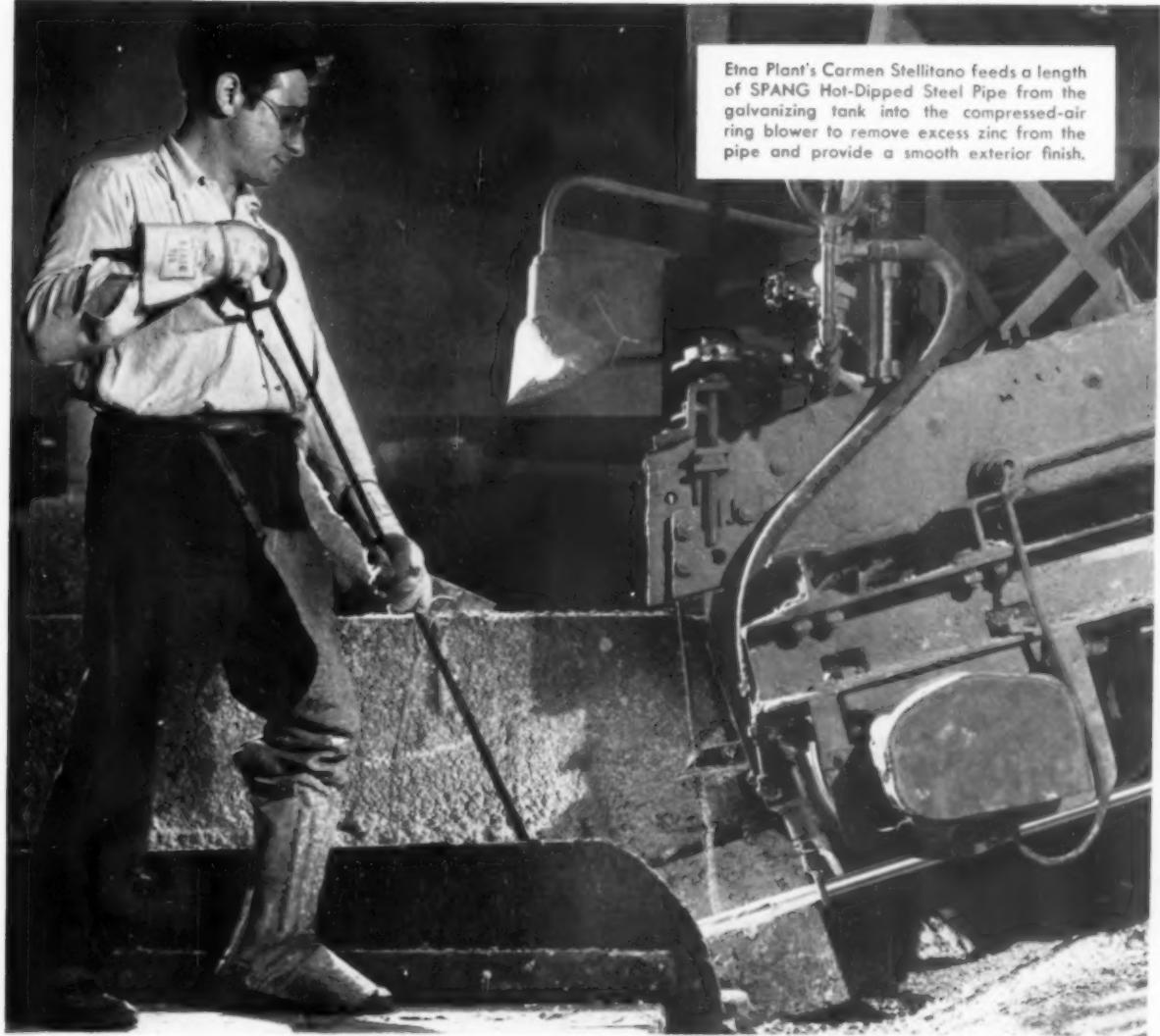
72-in. 1100 F

HIGH temperature piping problems confronted design engineers at the new Orange, Texas plant of Firestone Tire and Rubber Company. At the plant, which produces 40,000 tons per year of butadiene from butane, 23 of 67 large Badger expansion joints are 72 in. in diameter. Photos at the left show air blower with joints in discharge pipe and (below) hot air to reactors on left and hot hydrocarbon to reactors on right. Air outlet leading to waste heat boiler is shown above.

Design Problems — Some joints had to withstand temperatures as high as 1100 F. They had to compensate for complex movements. Systems of hinged joints or tandem joints were used to minimize forces on anchors and connected equipment. Other joints had to take axial movement as well as lateral movement in two different directions.

Process called for hydrocarbon lines with pressure range from vacuum to 2 lb absolute and temperatures from 1000 to 1100 F. Air lines operate at 12 lb pressure, and same temperature ranges. Hydrocarbon lines vary in diameter from 30-in. to 48-in. Air lines are 54-in. and 72-in.

Badger Manufacturing Co. Service-Rated expansion joints were used. Joints incorporate a curvilinear corrugation design which results in uniform movement per corrugation. All-curve shape of the corrugation results in lower flexing stresses and increased flexibility, even without reinforcing rings. Weight is about half that of conventional joints.



Etna Plant's Carmen Stellitano feeds a length of SPANG Hot-Dipped Steel Pipe from the galvanizing tank into the compressed-air ring blower to remove excess zinc from the pipe and provide a smooth exterior finish.

Out of this galvanizing tank comes the best steel pipe* you can buy!

...**Spang, of course!*

AND HERE'S WHY...

UNIFORM STRENGTH—SPANG Steel Pipe is produced under close control during forming and welding to provide a uniform pipe that's easy to cut, bend and thread . . . and it's hydrostatically tested well above normal operation pressures to be sure you get a strong pipe for rugged use.

HEAVY-DUTY UNIFORM FINISH—of prime western zinc, air-wiped outside to produce a smooth, even finish that will stand up under severe bending strains . . . blown inside with

superheated steam to provide a smooth finish for easy flow of liquids.

HIGH CORROSION RESISTANCE—Quick quenching of the hot galvanized pipe in a sodium dichromate solution gives a strong bonding of the finish to the steel . . . helps retard formation of white rust . . . adds extra service life to the pipe.

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SPANG®
CW STEEL PIPE

NEXT JOB
MAKE IT
SPANG®
STEEL PIPE

It's ideal for any piping installation, especially drainage and vent lines. You'll get quality every time. Save money in the long run, too! There's a SPANG Distributor near you, ready to give you quality service on your order.

*At the
Albany
Power
Station*



**Pacific Boiler Feed
Pumps Serve
NIAGARA MOHAWK**

Following the original installation of 6 Pacific Type BFI Boiler Feed Pumps in 1951 Niagara Mohawk added a battery of 3 Pacific Boiler Feed Pumps in 1952—and 3 more in 1953.

This record of repeat orders (one of many similar records) provides hard, factual evidence as to the dependability, efficiency and excellent design built into every Pacific high pressure high speed boiler feed pump. For additional data on these reliable pumps write for Bulletin 122.



PACIFIC

BF-28

PACIFIC PUMPS INC.

A Division of Dresser Industries, Inc.
HUNTINGTON PARK, CALIFORNIA

Incident Process Training

By M. D. ROCHELLE

HAVE YOU been looking for a development program for all levels of management? Can your supervisors stand improvement in getting the facts, making decisions, handling people, solving problems, labor relations and self expression? Do some of your training programs fall flat regardless of the amount of time put on them?

The North Carolina Finishing Company of Salisbury, N. C. tried the Incident Process Method in their training program with excellent results. A cure all? No, but no previous type of training developed such enthusiastic discussion, active participation and overall benefits.

Their experience? Approximately 100 management people took this course, ranging from hourly paid foremen to plant superintendents in groups of 10 to 12.

What is the Incident Process Method? It is a group participating program of a case study nature. This program was developed by Paul and Faith Pigors of MIT and is published by the Bureau of National Affairs, Washington, D. C.

The Incident Process gets off to a fast start. The trainee is given a short descriptive statement, one or two paragraphs, usually from an actual arbitration. It might read like this:

"On Wednesday morning George P. Swartz was handed the



following warning notice by his foreman. (Violation of rule number 17. Employee was seen buying coffee at the lunch wagon after 8:00 A.M. whistle blew.) Mr. Swartz protested this warning notice as unjustified and refused to sign it."

Each participant plays the role of an arbitrator. Their job is to hear and to evaluate the evidence, to render an award, and to write a brief report of their findings. The group members, after reading the statement, find out the facts by asking questions of the group leader who has the available facts and the actual arbitrator's award. Each participant has an opportunity to ask at least 10 or 12 questions.

Once the fact finding phase is completed, each individual group member writes his decision as if he were the arbitrator and lists his reason for his conclusion. He learns to think fast and logically and to base his decision on facts.

As soon as the group members have finished their decision writing, the group is divided into "yes" and "no" groups. Each group meets individually for about 10 minutes, appoints a discussion leader and develops the reasoning of the group. Both groups return to the conference room, and the spokesman for each side debates the issues.

The debate occasionally gets quite heated and is always very interesting. As each member listens to the opposing viewpoint

he cannot help but see that there are favorable points on both sides of the issue. After the discussion has been concluded, the arbitrator's decision is read.

The last phase and, usually the most important, is the evaluation of the case. The group now reviews the reasoning involved in the arbitrator's decision and the mistakes made by both parties. They discuss how the incident could have been avoided and what they might have done in a similar situation in their plant. After ten 1½ hour sessions the meetings were adjourned for the summer.

During the last meeting a questionnaire was given to all participants asking them whether or not they would like to continue meetings in the fall. 80% said they would like a series of three further meetings in the fall and over 90% said that the meetings were of great benefit to them. 85% said it was the best type of training program they had ever had.

Some of the comments: "It gave me an opportunity to see both sides of the question." "It taught me to think before I act." "The best thing I got out of this training is the fact that it is a lot easier for me to talk to my people than it was before." "Before attending these meetings I was afraid to get on my feet. Now, I don't mind a bit." "I used to have trouble staying awake during the other training sessions. This was so interesting I felt alert through the whole thing."

B. F. Goodrich



rides with coal

Tire manufacturer enlarges steam facilities; continues coal for economy, reliability

At its Oaks, Pa. plant, The B. F. Goodrich Co. uses steam principally for curing tires. When increased demand for its tires created the need for plant expansion in 1954, B. F. Goodrich found its original boiler plant could not supply sufficient steam. Completely new equipment was installed to increase capacity. But B. F. Goodrich continued to burn the economical fuel it had used in the past—coal.

In this modern coal-burning steam generation system, coal handling, ash disposal and the entire furnace operation are automatic. As a result of this modernization, fuel costs and manpower needs have been held to a minimum. And, in four years of operation, this installation has required only routine maintenance and repairs.

Facts you should know about coal

You'll find that bituminous coal is not only the lowest-cost fuel in most industrial areas but up-to-date coal burning equipment can give you 15% to 50% more steam per dollar. Today's automatic equipment can pare labor costs and eliminate smoke problems. And vast coal reserves plus mechanized production methods mean a constantly plentiful supply of coal at stable prices.

Technical advisory service

To help you with industrial fuel problems, the Bituminous Coal Institute offers a free technical advisory service. We welcome the opportunity to work with you, your consulting engineers and architects. If you are concerned with steam costs, write to the address below. Or send for our case history booklet, complete with data sheets. You'll find it informative.

Consult an engineering firm

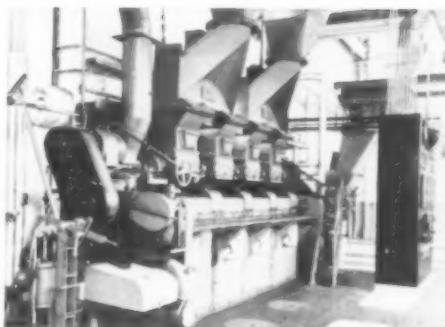
If you are remodeling or building new heating or power facilities, it will pay you to consult a qualified engineering firm. Such concerns—familiar with the latest in fuel costs and equipment—can effect great savings for you in efficiency and fuel economy over the years.

BITUMINOUS COAL INSTITUTE

Department SP07,

Southern Building, • Washington 5, D. C.

View of 100,000 lb/hr Wickes Boiler at B. F. Goodrich, fired by Detroit Rotograve Stokers. Coal is gravity fed from overhead bins through weighing equipment into stoker hoppers. Conveyor system is by Stock Equipment Co.



Shown here are overhead feeder and Stock coal-weighing equipment. This operation is all automatic. Coal goes from here to stoker.

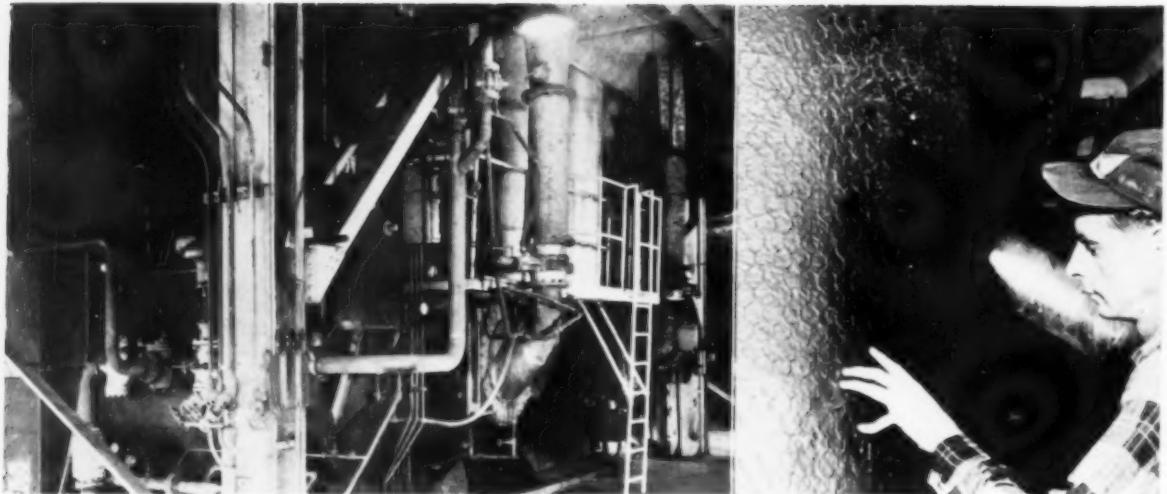


Close-up of Stock coal elevator, conveyors and swinging spout used to stock out coal. Ash silo is part of United Conveyor ash handling system.



Coal storage area, showing level, compacted coal pile. Coal is stocked out from swinging spout by bulldozer, which later reclaims it to the track hopper for conveying into power plant.





Mobile, Alabama . . .

Nickel-Copper Wire Netting Cuts Insulation Maintenance

THE EXTENSIVE use of Monel nickel-copper alloy netting for main steam lines, high temperature duct work, and boiler insulation has headed off difficult maintenance problems in the recent expansion of power plant facilities at the Mobile Mill of the Southern Kraft Division of the International Paper Co., Mobile, Alabama, one of the world's largest paper mills.

It is located in a highly corrosive industrial and salt water atmosphere near the Gulf and specific corrosion problems center around fumes generated by the cooking and bleaching process.

This corrosion and heat resisting nickel-copper alloy wire netting has successfully resisted moisture, heat, acid and alkalis, and the sulfate fumes since it was installed in the first portion of this power plant in November, 1956. Because it makes a tight, lasting, rugged fastening device, no repairs

or replacements have been necessary.

When the Monel (International Nickel Co.) insulation netting is used on such outdoor plants, exposed to a corrosive industrial atmosphere and all weather conditions, it lasts at least 2½ times as long as the conventional galvanized steel wire netting, reducing the annual insulation maintenance costs 50% and more.

The really big cost in insulation maintenance of boilers and steam equipment is the expensive scaffolding erection and dismantling necessary for repairs and re-insulation. Thus the long-life Monel netting usually pays its extra cost many times over by eliminating just one costly scaffolding job.

The first Monel insulation netting job was installed 12 years ago on a petroleum cracking tower, which is exposed to a highly corrosive industrial atmosphere. It is

Power plant of International's Mobile mill has two 450,000 lb/hr boilers driving two turbo-generators — one 40,000 kw and one 20,009 kw units. Monel netting installed on steam lines, etc., last at least 2½ times longer than conventional galvanized netting in outdoor corrosive atmospheres. Units are covered with a tar-asphalt mixture to afford further weather protection.

still intact and has required no maintenance. And so, elimination of scaffolding and other expensive maintenance procedure has made high savings possible. At the same time it assures a tighter and firmer job which provides better insulation efficiency. Although it is as strong as steel, it is ductile for easier working, forming, and tight clinching.

The netting used is three-twist 1-in. hex mesh, and is fabricated from 0.028-in. Monel wire by Gilbert & Bennett Mfg. Co., Georgetown, Conn. Because of Monel's higher strength, it's as strong in .028-in. diameter wire as the galvanized steel wire is in a diameter of .035 in.

The Monel hex mesh is available in 4-ft by 300-ft rolls. A total of 117,600 sq ft were used.

The insulation contractor was the Insulation Engineers Incorporated of Mobile, Alabama.

BUILT-IN ASSURANCE

To Help Make Your Plans Work As Specified...

F-M BUILTOGETHER CENTRIFUGAL PUMPS

hot and cold liquids
liquid circulation
low-viscosity liquids
boiler feed
cooling towers, etc.



Up to 900 gpm., pressures to 525 ft. Close-coupled pump and motor units mount horizontal, vertical or angular. Sizes $\frac{3}{4}$ " through 5".

F-M NON-CLOG PUMPS

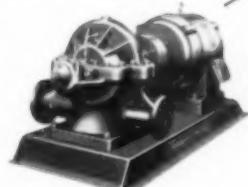
plant waste
slurries
paper stock
fruit
fish
vegetables, etc.



Up to 30,000 gpm., pressures to 175 ft. Sizes 2" through 20". Vertical or horizontal. Bladeless or conventional.

F-M SPLIT-CASE CENTRIFUGAL PUMPS

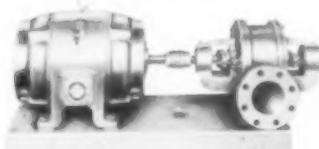
water supply; plant service
booster; circulating
air conditioning
refrigeration
chemical liquids
boiler feeds, etc.



Up to 50,000 gpm., pressures to 700 ft. Sizes $1\frac{1}{2}$ " through 36". Single stage or multistage.

For full information about Fairbanks-Morse pumps, call your F-M Sales Engineer or write F.M. Sales Co., 600 S. Michigan Ave., Chicago 5, Ill.

F-M WESTCO PERIPHERAL PUMPS



boiler feed
condensate return
hot and cold liquids
chemicals
refrigerants, etc.

Up to 200 gpm., pressures to 900 ft. High pressure at normal operating speeds. Handle widely varying heads with little change in capacity. Sizes $1\frac{1}{4}$ " through $2\frac{1}{2}$ ".

The best-laid plans can go astray when mechanical equipment fails to deliver according to expectations or fails to give sustained peak performance. That's why Fairbanks-Morse builds something extra into all pumps so your plans work *as specified*.

F-M PUMPS YOU CAN RELY UPON

Full-rated capacity guaranteed...with built-in safety margin to assure maximum efficiency under most severe use. Rugged, durable, precision-made to maintain efficiency with minimum service.

EXPERT HELP WHEN YOU WANT IT

F-M Engineers are ready to work with you on any of your pump problems.

F-M END-SUCTION PUMPS

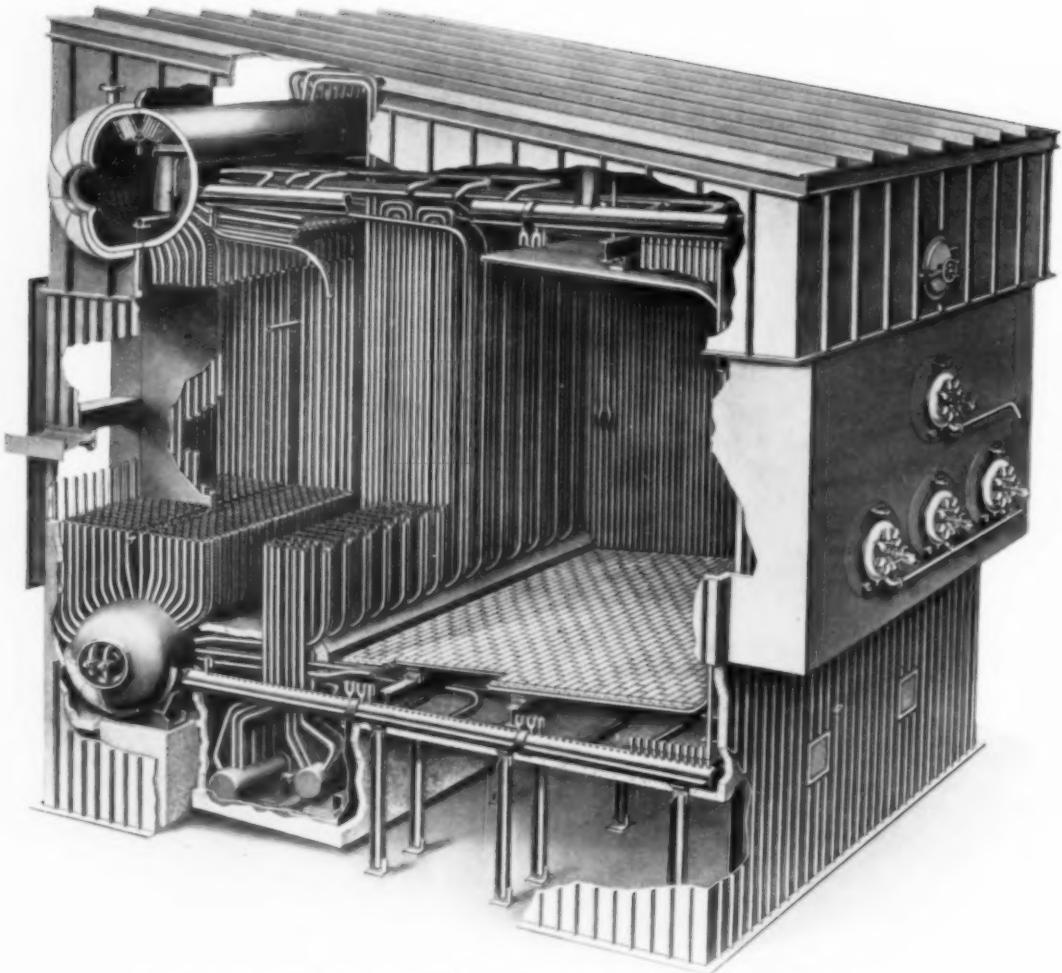


hot and cold liquids
chemicals
circulating liquids
low-viscosity liquids
cooling towers
condenser circulation, etc.

Up to 100,000 gpm., pressures to 250 ft. Sizes $\frac{3}{4}$ " through 54". Horizontal or vertical.

FAIRBANKS-MORSE

a name worth remembering when you want the BEST



Here are eight ways in which the PFI Boiler can be of benefit to you:

1. It requires a minimum amount of space for a given power output.
2. The pressurized furnace design assures economy by eliminating the induced draft fan and air infiltration. This means savings in cost of fans, fuel, and operating power.
3. Pre-assembly of many of the components of the PFI Boiler is controlled in B&W shops, resulting in a reduction of the time and manpower required for field erection.
4. The PFI is designed to burn oil, gas, or a combination of the two. When it is equipped with a dual-fuel burner, it allows you to take advantage of favorable market conditions.
5. Cyclone Steam Separators ensure adequate water circulation which protects boiler tubes from overheating, even with wide and frequent changes in load. They also give you clean, dry steam at all designed ratings with high boiler water concentrations.
6. The drainable superheater design assures quick, safe start-up and ease of storage.
7. Water-Cooled Burner Throat eliminates troublesome maintenance, costly repairs.
8. All-welded Membrane Wall contributes to high efficiency and reduces insulation requirements.

Announcing New, Economical Power for Industry

**New B&W
PFI Oil-Gas Burning Unit
Provides Maximum Output in Minimum Space**

Here's an answer to industry's need for an economical, dependable steam supply. The new B&W Integral-Furnace Boiler produces high-quality, dependable steam economically at all ratings. Aptly named the PFI, the "Power For Industry" Boiler is compact, easy to install, quick to meet rapid and wide load swings. The new boiler gives long, sustained operation, requires little attention and is readily accessible for inspection, cleaning and maintenance.

All responsibility for your complete delivered and erected unit is accepted by one experienced, dependable source which in the past 25 years alone

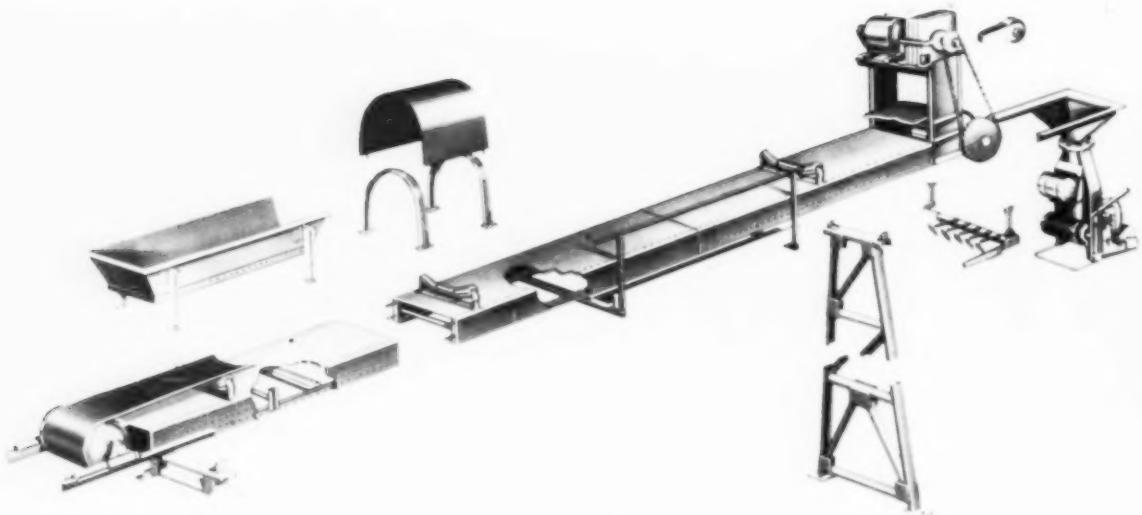
has placed over 4,000 Integral-Furnace Boilers in service. Behind every B&W Boiler is nearly a century of leadership in steam generation. A national network of B&W plants and engineering facilities means that the special skills of B&W engineers are always quickly available to you for service and assistance. The Babcock & Wilcox Company, Boiler Division, 161 East 42nd Street, New York 17, N. Y.

For further information
about the B&W PFI Boiler,
write for Bulletin G-94.





NEW Product Briefs



"Packaged" Sectional Belt Conveyor Design

G-1 A new pre-engineered sectional belt conveyor, featuring bent-plate decking has been introduced by **Stephens-Adamson Mfg. Co.**, Ridgeway Ave., Aurora, Illinois.

The new packaged unit complete with head and tail assemblies, supporting "A" frames, and intermedia-

ate sections of bent-plate decking is available in 18, 20, 24, 30 and 36 in. belt widths, with drives ranging up to 50 hp.

Punched with bolt holes every 8 in. in rows on top, bottom and along its sides, the 12 ft sections of steel decking provide for simple erection or alteration of conveyor.

The 12 ft sections offer greater flexibility in lengthening, shortening and altering the conveyor. The decking provides its own protection

for the return belt run. Return rollers and returning belt are mounted on its underside, shielded from weather and falling material.

The unit is pre-engineered and aligned for simple erection at job site. Engineering details are given in Bulletin 458.

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on the Handy Return Card — Page 81

Wire Rope

G-2 A new type of wire rope, combining the flexibility and abrasion resistance of Lang lay rope with the stability of regular lay rope under severe operating conditions, has been announced by the **Wire Rope Division, John A. Roebling's Sons Corporation**, Trenton 2, N. J.

Herringbone wire rope is a new construction employing two pairs of Lang lay strands and two strands of regular lay. This new wire rope has relatively large outside wire construction to take the pressure and abrasion of contact with sheaves

and drums, combined with smaller inside wire construction so patterned as to provide the maximum flexibility in service.

Air Hoists

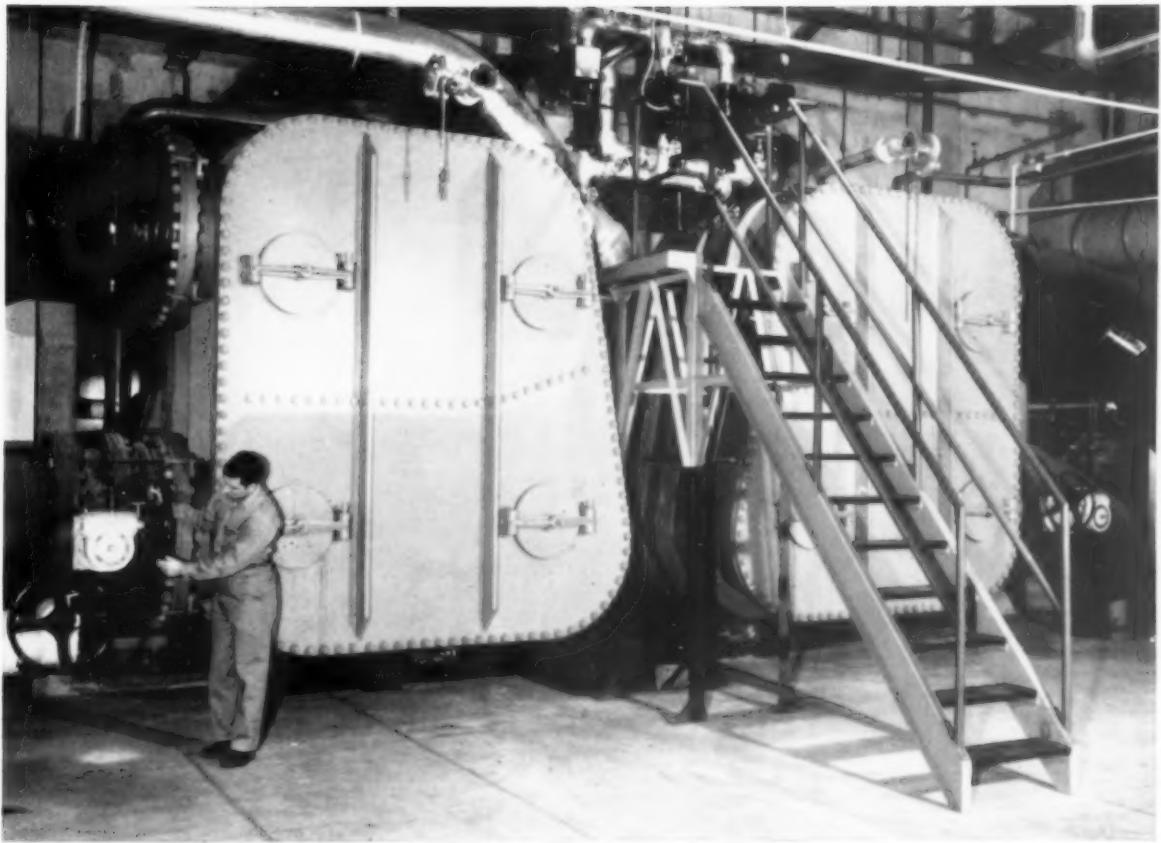
G-3 **Shaw-Box Crane & Hoist Division of Manning, Maxwell & Moore, Inc.**, Muskegon, Michigan, have announced a new line of "Budgit" Air Hoists available in either link or roller chain types in $\frac{1}{4}$, $\frac{1}{2}$ and 1 ton capacities.

All models of the "Budgit" Air

Hoist operate on a line pressure of 80 psi. Details are given in Bulletin No. 15010-24-58.

Portable Lift

G-4 Renamed the Hartman Booster, the former Oster Portable Lift is now being manufactured by **Hartman Metal Fabricators, Inc.**, 133 Murray St., Rochester 3, N. Y. Used primarily for materials handling and maintenance, the lift has a load range of 500 to 2,000 lb to a maximum height of 112 in.



Consulting Engineers, Gibbs & Hill

PLUS PERFORMANCE FROM YUBA CONDENSERS

Performance tests made by the Indianapolis Power & Light Company on this 50,000 sq. ft. Yuba surface condenser a year after it was installed in their H. T. Pritchard Station showed zero oxygen content in the condensate. The temperature of the condensate was found to be 3.9 degrees higher than the temperature corresponding to saturation pressure. Heat transfer was 106.6% of design.

Magnificent performance such as this is far in excess of guarantees and it proves once again that there are great plus values in Yuba equipment.

Consult Yuba for advanced condenser design and manufacture. Yuba condenser designs can save plant space, as well as initial cost for foundations and piping. A de-aerating section within the condenser shell eliminates the main plant de-aerating heater.

PROGRESS IN POWER THROUGH PROGRESS IN HEAT TRANSFER EQUIPMENT

YUBA HEAT TRANSFER DIVISION

HONESDALE, PENNSYLVANIA
NEW YORK SALES OFFICE: 530 FIFTH AVENUE
REPRESENTATIVES IN PRINCIPAL CITIES

Other Yuba Divisions

Adco Division, Buffalo, N. Y.
California Steel Products Division, Richmond, Calif.
Yuba Manufacturing Division, Benicia, Calif.



STEAM SURFACE CONDENSERS
EVAPORATORS
STEAM JET REFRIGERATION
STEAM JET AIR EJECTORS
FEEDWATER HEATERS
BAROMETRIC CONDENSERS

YUBA CONSOLIDATED INDUSTRIES, INC.

New Product Briefs (Continued)



Bulk Storage Bin Discharge Device

G-5 Fairmont Machinery Company, Fairmont, W. Va., is now manufacturing and selling the BCR Easy-Flo Bin Device, developed by Bituminous Coal Research, Inc.

The new device provides reliable

flow of coal from bins without arching, ratholing, or funneling. It requires no moving parts or vibrating mechanism.

Although developed for problem-free discharge of coal from bins and silos, the Easy-Flo Bin can be used effectively for other bulk solids such as sand, gravel, grain, chemicals, fuels, ores, pigments, abrasives, plastic powders, metal powders, fertilizers, and catalysts, in the form of dusts, prills, pellets, granules, tablets, etc., either in a dry, semi-dry, or moist condition.

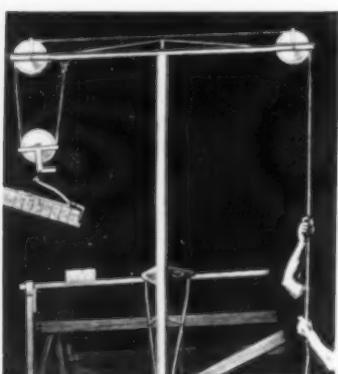
The BCR Easy-Flo Bin is attached to the bottom opening of conventional storage bins and provides a means for controlling the flow of coal or other bulk solid. Once the stored material passes by gravity from the storage bin into the device, a double-cone arrangement within the device maintains the bulk material in an unpacked state. Gravity outflow is assured because the forces acting on the material are controlled and conditions which are the cause of stoppages in conventional bins cannot develop.

As an example of its performance, the unit provides problem-free handling of $\frac{1}{4}$ x 0-inch coal with up to 15% surface moisture, reliable flow with sizes up to three-inch, and has gravity feed rates up to 7000 lb/min.

features automatic unloading.

One man can load the material, hoist, swing into position and then automatically unload at any position on the scaffold. The Clipper Hoist, which can be erected in about 20 seconds, can be adapted to almost any hoisting job.

Brick, block, tile, flue linings, plankings, kegs, roofing pitch, mortar, concrete and decking are some of the materials that can be easily handled.



Portable Hoist Automatically Unloads

G-6 A new lightweight and completely portable 250 lb capacity hoist, by Clipper Manufacturing Company, Suite 235, 2800 Warwick, Kansas City 8, Mo.,

truck docks without expensive alterations. The new 1200 model is simply bolted to the top of the dock.

A counterweighting system is mounted on the face of the dock between two Kelco Bumpers. No electrical, air or hydraulic power is required.



The backing truck automatically lowers the ramp to the working position. After loading operations are completed, the ramp automatically returns to its original position, ready to service the next carrier. No dock attendant is needed.

Standard models are 6' wide, and 8' and 10' long with roll-over capacity of 12,000 lb.

For More Free Data CIRCLE CODE NO. on the Handy Return Card — Page 81

Front-End Loader

G-8 The Frank G. Hough Co., 878 Seventh Ave., Libertyville, Illinois, has announced production of an entirely new "Payloader" model, the H-25. It is the first rubber-tired, front-end loader with a rated carrying capacity of 2,500 lb.

Although it has more capacity and is larger and heavier, it can be operated in and out of boxcars having 6 ft doors. Power-steering as a standard feature assists both maneuverability and ease of handling.



Automatic Dockboards

G-7 A new concept in dockboard design by Kelley Co., Inc., 2111 West Mill Rd., Milwaukee 9, Wis., makes it possible to install a new Hi-Lo Automatic Dockboard to existing

This new "Payloader" is being offered with a choice of gasoline, diesel or LPG (liquefied petroleum gas) power. The 44 hp gasoline engine is equipped with wet sleeve cylinder liners for easier maintenance and the overhead valve design provides greater efficiency.

CLARAGE FANS
FOR YOUR

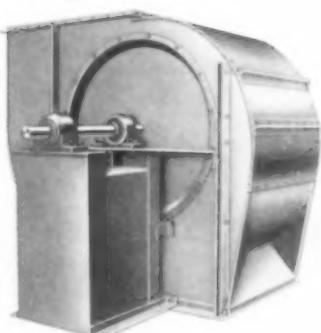
INDUSTRIAL AIR TRAVEL

Blowers and exhausters for
diversified industrial applications.

Standard models promptly available.

Clarage builds air handling and
conditioning equipment exclusively —
concentrated know-how!

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and built for "the long pull"—
to stretch your equipment dollar
to the utmost — call on
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SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES • IN CANADA: Canada Fans, Ltd., 4285 Richelieu St., Montreal

New Product Briefs (Continued)

Control Cabinets for Combustion Systems

G-9 **The Webster Engineering Company**, Box 2168, Tulsa, Oklahoma will fabricate to specifications or design and fabricate complete control cabinets for any type of combustion system.

Cabinets are rugged in construction, gasketed against dust and contain only the finest electrical components. All wire ends are permanently fitted with A-MP ring tongue solderless terminals and all wire is run in plastic Panel-Chanel. Field wiring is all terminated on heavy duty WAMA Add-a-Point strips plainly marked for easy identification.

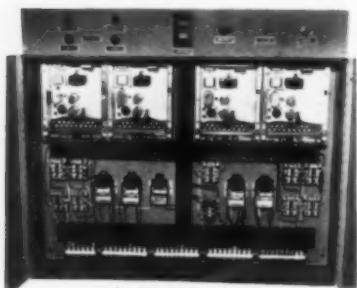


Photo shows a W4-FP4 Combustion Safeguard Control Cabinet designed to provide pre-purge period and semi-automatic ignition of pilot and main flame for four burners installed in single boiler. System provides for timed pilot period, main flame supervision and visual indication by signal lamps or system condition.

The same type of integrated system may be obtained mounted and wired in similar fashion on free standing panels. Engineering details in Bulletins AP5/1 and C11/1.

Acid Resistant Chains

G-10 Two new chains, Acco X-Weld Acid Pickle and Acco X-Weld Type 321 Stainless Steel, have been developed and designed to provide optimum service in high temperature applications and also in solutions of sulphuric or nitric acids by the **American Chain Division, American Chain & Cable Company, Inc.**, York, Pa.

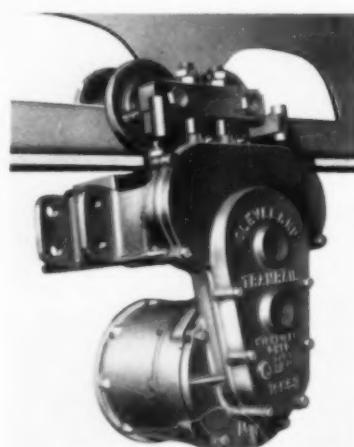
The Acid Pickle Chain can be successfully used in concentrations

of sulphuric acid up to 20% and at temperatures up to 200 F. It will not scale below 1700 F and has a remarkably long life when utilized below that temperature. It is available in five popular sizes of 9/32, 5/8, 1/2, 5/8 and 3/4 in. with working load limits of 1600, 3200, 5200, 7500 and 9850 lb respectively.

The Type 321 Stainless Steel chain is recommended, by the manufacturer, for use in nitric acid pickling operations under high temperature and/or atmospheric oxidation conditions. These chains are also provided in 9/32, 5/8, 1/2, 5/8 and 3/4 in. sizes with working load limits of 1600, 3200, 5200, 7500 and 9850 lb respectively.

Motorized Overhead Tramrail Tractor

G-11 A motor-powered tractor for use on overhead tramrail materials handling systems has been developed by the **Cleveland Tramrail Division of The Cleveland Crane & Engineering Co.**, Wickliffe, Ohio.



Designated as Type "MT" Tractor, the unit is driven by two 5-in. diameter steel rollers under spring pressure against the bottom of the track. Rubber drive rollers are also available for special applications. The tractor will develop a drawbar pull of 300 lb.

The "MT" Tractor can be used to great advantage as a single motor drive for one or more carriers in a train and can be used for motorization of hand power cranes and

carriers. It is especially adaptable for systems that have inclined tracks.

Minimum speeds of this unit are 50 fpm with a 1/2 hp motor, 75 fpm with a 3/4 hp motor and 100 fpm with 1, 1 1/2 or 2 hp motors. Maximum speed is 350 fpm.



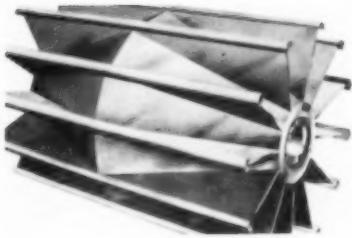
Explosion Proof Fork Lift Truck

G-12 Pictured is the new 54.00 Go-Getter for use in explosion hazardous areas — specially designed for Class I, Group D; Class II, Group G; dust or fume laden areas by **Revolator Co.**, North Bergen, N. J.

Go-Getter is available in a complete range of low lift platform models, 4000 & 6000 lb 4" lift; low lift pallet types, 4000 & 6000 lb 4" lift; high lift platform type models, 3000 & 4000 lb — lifts to 115"; the high lift form straddle type, 2500, 3000 & 4000 lb — lifts to 156"; the tractor type — 700 lb draw bar pull and the high lift fork counter balanced tilt type, lift capacities 1000, 1500, 2000, 2500 & 3000 lb — lifts to 115".

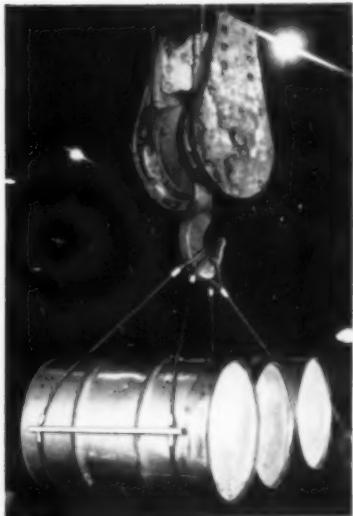
Self-Cleaning Pulleys With Taper-Lock Hubs

G-13 Welded Steel Wing Type Self-Cleaning Pulleys with "Taper-Lock" hubs are the latest addition to the extensive line



of materials handling equipment manufactured by the Industrial Division of **Continental Gin Company**, Birmingham 2, Ala.

Self-cleaning pulleys assist in belt alignment by preventing build-up of material on the pulley face. Continental "Taper-Lock" hubs offer the most satisfactory type of clamp hub at an economical price, and give the equivalent of a shrunk-on fit on the shafting while permitting easy assembly and dis-assembly.



Drums Lifted Three-at-a-Time

A new type of wire rope G-14 sling, especially designed for drum hoisting makes possible safe, fast, three-at-a-time lifts. Constructed by **Lowery Brothers, Inc.**, 9332 S. Anthony Ave., Chicago 17, Ill., the sling eliminates single handling of heavy drums, speeds use of hoisting equipment.

Each drum is held securely with no possibility of shifting or falling out of sling. Load is evenly distributed and drums are held tightly

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NEW JUST OFF THE PRESS

This new Bulletin, with 182 photographs, diagrams and tables, is a handbook of refrigeration in all its commercial and industrial phases—air conditioning, ice making, quick freezing, cold storage, process work, etc.

Details of heavy-duty compressors, multi-cylinder compressors, booster systems, condensers, coolers, coils, controls, valves and auxiliaries are fully explained.

If your business uses cooling equipment, you'll profit from reading this informative 32-page booklet. Available in English, Spanish and Portuguese. Your free copy is waiting.



THE "BIBLE"
OF AIR CONDITIONING
& REFRIGERATION PRACTICE

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FRICK CO.
WAYNESBORO, PENNA., U.S.A.

New Product Briefs (Continued)

together by their own weight. Spreaders hold wire rope in position as it passes around the load and help keep the drums balanced while in transit.

Lowery hand-spliced loops with tapered swaged fittings reduce time required to hitch and unhitch each load. Sling ends slip neatly under drums, back to hook. Swaged fittings used on this sling are tapered at both ends — they cannot catch on the load or injure workmen's hands.

Slings cost approximately \$30 each.



Air-Operated Chain Hoist

G-15 A compact new 1000-lb, air-operated chain hoist, which weighs only 30 lb and raises half-ton loads at a rate of 50 fpm, has been announced by the **Thor Power Tool Company**, Prudential Plaza, Chicago, Ill.

Model H-1000, powered by a reversible 8-blade air motor, is capable of lowering rates up to 96

fpm under maximum load. Sensitive throttle control permits accurate spotting of loads and infinite graduation of load lifting or lowering rate from crawl speed to maximum speed.

The Thor H-1000 is available with two types of throttle control, manual nylon rope and pendant or remote control which permits one-hand hoist operation by means of a two-lever (lift and lower) throttle at hand height.

Heavy-Duty Clamp for Storage Racks

G-16 A new, heavy-duty universal clamp which permits the construction of rugged, double-bay storage racks from standard channel or I-beam has been announced by **Tube-Strut Corp.**, 2960 Marsh St., Los Angeles 39, Calif.

The Beam-Strut clamp has been engineered on the same principle of the well known Tube-Strut but with a variation of design which permits the use of standard channel or I-beam with ordinary pipe. Pipe is used for the vertical members and cross pieces, and channel or I-beam for the load bearing members, thus providing the extra load capacity where required for heavy-duty pallet loads and double-bay openings.

Beam-Strut clamps are available in 3" and 4" sizes to accommodate standard channel or I-beam. Beam-Strut storage racks provide load capacity as high as 20,000 lb in a double-bay pallet opening. These racks will also permit double and triple stacking of these heavy-duty loads which means a saving of as much as 50% in warehouse floor space.



Universal Derrick

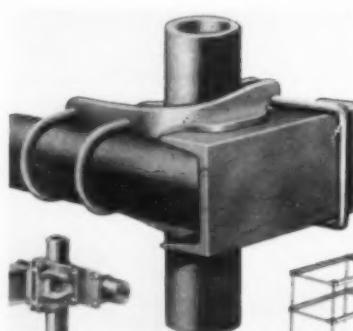
G-17 Photo shows typical installation of the **Equity-Sasgen** pneumatic power derrick available from the **Equitable Equipment Co., Inc.**, 410 Camp St., New Orleans 12, La.

Applications include supply and cargo handling on platforms, wharves, docks, etc. Illustrated Model No. 5315 has a 15 ft boom. Units are available for hand, electric, engine or pneumatic power and can also be used with worm-driven truck winches.

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Tractor Shovel

G-18 A new industrial tractor shovel by the **Yale Materials Handling Div., The Yale & Towne Manufacturing Company**, 11000 Roosevelt Blvd., Philadelphia 15, Pa., offers a 2500 lb carry capacity, full 6 ft high dumping clearance, fully automatic torque transmission which eliminates clutch pedal and manual gear changing, and





a forty-five degree bucket tip-back at ground level.

Bucket capacities range from 10 to 27 cu ft. Unit offers rapid acceleration, 0 to 8 mph in 3½ sec., and a top speed of 13 mph. Attachments are available for specialized handling requirements.

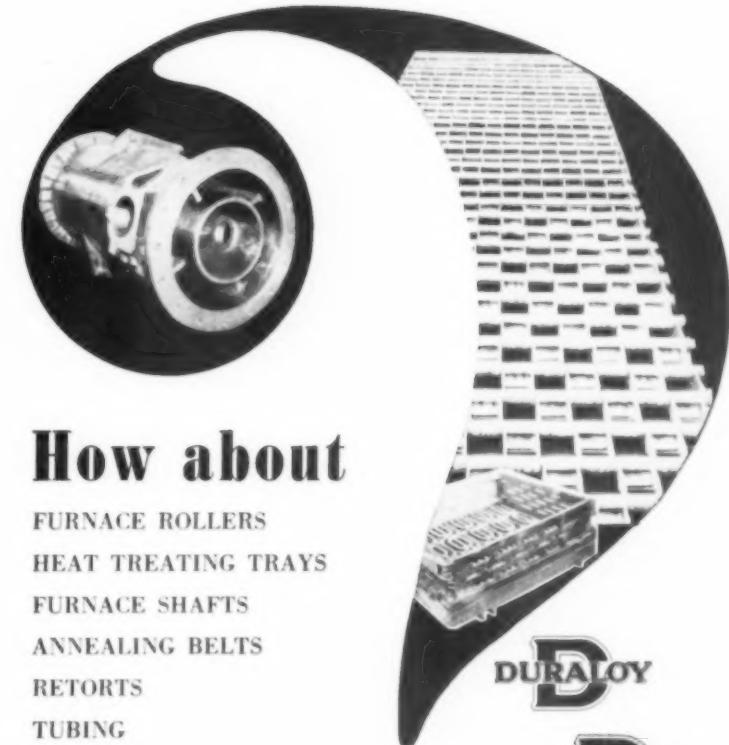
Conveyor Roller

A new lightweight conveyor roller for package and carton handling has been introduced by **The E. W. Buschman Co.**, Clifton & Spring Grove Avenues, Cincinnati 32, Ohio. The new No. 138 roller exclusively features "Spring-o-matic" axle construction to permit quick, easy insertion or removal of the roller from the frame.



For positioning roller in conveyor frame, the shaft end is manually depressed; spring loaded, it snaps into the axle hole of the frame, ready for immediate operation. "Spring-o-matic" construction also makes for trouble-free removal of rollers without tools.

The conveyor sections are available in 12" and 18" widths from stock, and other widths from 6" to 30" on special order. The roller itself, which turns on an integral ball bearing, is 1½" in diameter, with 18 gauge steel wall, and is rated at 80 lb capacity.



How about

FURNACE ROLLERS

HEAT TREATING TRAYS

FURNACE SHAFTS

ANNEALING BELTS

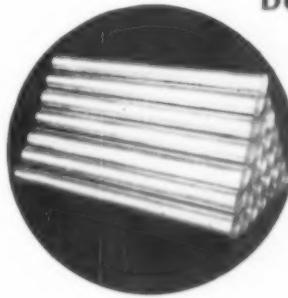
RETORTS

TUBING

Which are
Heat Resistant

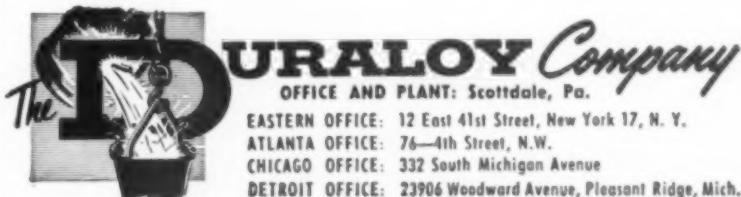
Corrosion Resistant

Abrasion Resistant



When ready to order, how about checking with us here at DURALOY? For more than thirty years we have specialized in high-alloy castings. In fact, we were among the first to produce static castings and the first to produce centrifugal castings. We are old hands at producing castings alloyed to fit each specific requirement and to finish them to any extent desired.

Melt, castings and finishing are carefully controlled and quality tested by our staff of metallurgists, chemists, X-ray and gamma-ray technicians. If you would like more preliminary information, send for Bulletin No. 3150-G.





NEW Catalogs & Bulletins

STEAM TURBINES . . . FURNACES BOILERS, STOKERS, BURNERS

5—Refractories — Paco High Heat Duty and Super Duty Plastic Refractories. Fire brick, high temperature cement, castables. Installation and engineering service. Free estimates and inspection. — NORTH STATE PYROPHYLLITE CO.

11—Feedwater Treatment — Bulletin describes liquid and dry (Braxton & Flako) boiler feedwater treatment recommended for removal and prevention of scaling and corrosion during use of many types of water and for prevention of foaming and carryover. — ANDERSON CHEMICAL CO.

23—Soot Blowers — Bulletin 1030 describes Vulcan T-30 retractable soot blowers, available in lengths up to 38 ft. Includes sectional drawings and special design features. — COPES-VULCAN DIVISION.

30—Guide Specifications — 64 page brochure, including 5 drawings, is a comprehensive guide for preparing specifications on coal-fired low-pressure heating plants in the size range of 750,000 to 5,500,000 Btu/hr. All aspects affected by choice of fuels from storage bin to stack design covered fully. — BITUMINOUS COAL INSTITUTE.

35 — Unit Steam Boilers — Catalog AD-100 — Gives complete information on oil and gas fired "Self Contained" boilers, 15 to 500 hp, 15 to 250 psi for processing and for heating. Gives features, applications, efficiencies, capacities and dimensions. — CLEAVER-BROOKS CO.

44—Fan Stacks — I-D fan, breeching and stack integrated in a single unit described in Bulletin 1-PCD-1. Straight through breeching assures high, predetermined efficiency. Structural steel requirements reduced and installation simplified. — PRAT-DANIEL CORPORATION.

51—Packaged Water Tube Boilers — Complete data and dimensions for boilers ranging from 8,000 to 50,000 lb/hr, firing oil or gas or both.

described in 12 p Catalog 111-D. — SUPERIOR COMBUSTION INDUSTRIES, INC.

62—Stokers — Catalog 525 describes and illustrates the complete line of underfeed and overthrow spreader stokers. Sizes for boilers from 3,000 to 400,000 lb/hr steam capacity. — DETROIT STOKER CO.

74—Packaged Generator — Bulletin 582 describes Vapormatic Coil-N-Shell Steam Generator for service requirements of 5 to 150 psig. Gives operation features and specification data. Available with gas, oil, and combination gas/oil fuel systems. — TEXSTEAM CORP.

93—Package Generators — 6 p bulletin describes complete line of package generators designed specifically for forced circulation hot water system outputs from 670,000 to 6,700,000 Btu. — CYCLOTHERM DIVISION.

FANS—PUMPS—COMPRESSORS HEATERS—HEAT EXCHANGERS

107—Proportioning Pumps — 4 p brochure illustrates and describes company's proportioning pumps and package chemical feeding units. Includes applications and specifications. — BIRD ARCHER CO.

108—Active Air — Catalog 2046 shows how to put active air to work in buildings and shops. Direct drive exhaust fans, air circulators, and ceiling fans. — EMERSON-ELECTRIC.

126—Centrifugal Pumps — Bulletin 7248A covers new DMV-DHV single-stage line for general hydraulic service; double mechanical shaft seals eliminate stuffing box maintenance; sizes from 3 to 6 in. with heads to 350 ft & capacities from 250 to 2400 gpm. — INGERSOLL-RAND.

132—Glassed Centrifugal Pumps — 12 page Bulletin 725.2 describes line of glassed pumps for handling corrosive acids and alkalies. Every part of pump exposed to liquid has

a tough glass surface. Specification, ratings, dimensions. — GOULDS PUMPS, INC.

137—Volute Pumps — 6 p Catalog F-102 describes low and high head mixed flow volute pumps for sewage disposal, drainage, flood control, etc. Presents design details. Units built in 12" through 72" sizes, and in 3000 to 150,000 gpm capacities. Heads up to 180 ft. — WHEELER MFG. CO., ECONOMY PUMP DIV.

143—Chemical Feeders — 36 p Bul. 1136 describes metering pumps — types, construction, displacement and operating pressures. Gives handling recommendations for chemicals, acids, etc., and volumetric conversion tables. — MANZEL.

155—Axial & Mixed Flow Pumps — 12 page Catalog G-100 describe axial and mixed flow vertical and

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horizontal pumps. Capacities from 5,000 to 200,000 gal/min; heads from 5 to 75 feet. — C. H. WHEELER MFG. CO.

165 — After Cooler — Bulletin 130 shows how the Aero unit removes moisture from compressed air or gases; "cools water for jackets and intercoolers; cools air or gases in both power and process systems; and protects air tools and pneumatic systems from water damage.—NIAGARA BLOWER COMPANY.

177—Hand Pumps — 8 p Bulletin 310 describes Flo-master hand pumps for handling liquid materials from drums, barrels, underground and skid tanks and storage vats. Includes pump selection chart. — BLACKMER PUMP CO.

**INSTRUMENTS—METERS
CONTROLS—REGULATORS**

209—Liquid Level Controls—Catalog describes controls for almost any liquid, at any pressure, at any temperature. Can be furnished in top-mounting, side-mounting styles, or as external float cage units. Almost unlimited application. — MAGNETROL, INC.

212—Automatic Temperature Control—Data sheets describe versatile automatic indicating temperature control offering many sequence combinations—step-heating, heating and cooling, wide limit control, or temperature control plus operation of signal devices.—SARCO COMPANY, INC.

231—Control Valves — Catalog No. 305 illustrates and describes construction and specifications for a wide line of air operated diaphragm control valves suitable for the majority of general process applications and plant services. — MASON-NEILAN.

234—Soot Blowing Control Systems — 16 p Bulletin 1029 describes line of systems. Gives complete

engineering description and illustrations of Selective-Sequence and Automatic - Sequential insert-type panel controllers. List of typical installations shows a wide variety of applications. — COPES-VULCAN DIVISION.

246—Desuperheater—Product Specification M55-1 describes design, installation, and typical application of high capacity, fast acting spray type steam desuperheater.—BAILEY METER CO.

254—Pilot Pressure Controller — Bulletin D-4 — Describes the dependable Wizard pilot, Series 4100 U, in a new gas type weather-proof case for flush or surface panel mounting, available with either bellows or Bourdon tube measuring

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horizontal pumps. Capacities from 5,000 to 200,000 gal/min; heads from 5 to 75 feet. — C. H. WHEELER MFG. CO.

165—After Cooler — Bulletin 130 shows how the Aero unit removes moisture from compressed air or gases; "cools water for jackets and intercoolers; cools air or gases in both power and process systems; and protects air tools and pneumatic systems from water damage.—NIAGARA BLOWER COMPANY.

177—Hand Pumps — 8 p Bulletin 310 describes Flo-master hand pumps for handling liquid materials from drums, barrels, underground and skid tanks and storage vats. Includes pump selection chart. — BLACKMER PUMP CO.

INSTRUMENTS—METERS CONTROLS—REGULATORS

209—Liquid Level Controls — Catalog describes controls for almost any liquid, at any pressure, at any temperature. Can be furnished in top-mounting, side-mounting styles, or as external float cage units. Almost unlimited application. — MAGNETROL, INC.

212—Automatic Temperature Control — Data sheets describe versatile automatic indicating temperature control offering many sequence combinations—step-heating, heating and cooling, wide limit control, or temperature control plus operation of signal devices.—SARCO COMPANY, INC.

231—Control Valves — Catalog No. 305 illustrates and describes construction and specifications for a wide line of air operated diaphragm control valves suitable for the majority of general process applications and plant services. — MASON-NEILAN.

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336—Retaining Walls—Catalog RW 3555 shows how bin-type walls stabilize slopes and gain valuable ground for buildings, parking areas; all metal cellular construction; all-bolted assembly means small crews can do the job. — ARMCO DRAINAGE & METAL PRODUCTS, INC.

363—Magnetic Separators— Catalog 910 covers wet concentration and magnetic recovery. Various types and sizes shown as well as typical installations and machines. — JEF-FREY MFG. CO.

377—Track Switch Materials— Catalog 575A points out time and money savings through single-source buying of track materials and supplies. Offers information on frogs, switches, crossings, etc. — L. B. FOSTER CO.

386—Rigid Frame Buildings—8 page bulletin "Dixisteel Rigid Frame Buildings" — low cost, flexibility of design, durability, and minimum maintenance; also triangular or bow-string truss all-steel roof system; fabricated for rapid erection. — ATLANTIC STEEL COMPANY.

PIPING, VALVES, FITTINGS
STEAM SPECIALTIES, TRAPS

403—Valve Operators—Folder shows how re-designed sprocket rim makes any valve readily accessible from the floor. Simplifies pipe layouts, prevents accidents, fits all valve wheels. — BABBITT STEAM SPECIALTY CO.

411—Steam Trap Book— 44 page Steam Trap Book contains useful data on trap sizing, calculation of condensate loads, installation and maintenance data. — ARMSTRONG MACHINE WORKS.

417—Welding Fittings— 192 page Cat. 54 gives design data on piping and piping application including digests of specifications, working pressures, design formulas, etc. Covers welding fittings, pre-fabricated pipe, forged steel flanges, and pipe coils. — MIDWEST PIPING COMPANY, INC.

419—Small Gate Valve— Multiple applications of small forged steel gate valve noted in Catalog 10. Low maintenance. Sizes from $\frac{1}{4}$ " to 2"; rising stem with yoke or rising stem with inside screw; Pressures from 380 psi at 1000 F to 2000 psi at 100 F. — THE CHAPMAN VALVE MFG. COMPANY.

420—Valves— 24 page Catalog illustrates and describes bronze, iron, steel and corrosion-resistant valves for controlling the flow of water, oil, gas, steam and corrosive fluids. — THE WM. POWELL CO.

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429—Expansion Joints — 8 p Bulletin EJ-1915 describes Type W Gun-Pakt expansion joint which features an improved one-piece design of body and gland. Includes data on figuring expansion of pipe lines and suggestions for installing expansion joints. — YARNALL-WARING CO.

448—Steam Trap Troubles — Booklet for plant engineering personnel "Banish Your Steam Trap Troubles." —YARNALL-WARING COMPANY.

451—Aluminum Jacketing & Elbows — Folder J-1 describes aluminum protection for insulated lines, elbows, towers, vessels and tanks. Jacketing in 5 thicknesses, 2 alloys, Ell-Jacs in 60 sizes both for 90° and 45° ells. — CHILDERS MANUFACTURING CO.

456—High Alloy Castings & Pipe — Bulletin 3354G explains how static and centrifugal casting & pipe offer maximum resistance to heat and corrosion. — THE DURALOY COMPANY.

MAINTENANCE PACKING GASKETS, LUBRICATION

501—Neoprene Rubber - Coating — Charcote, a waterproof protective barrier against rust and corrosion described in 4 p bulletin. Offers plant engineer outstanding protection against corrosive fumes, salt spray, abrasion and moisture. — CHARLESTON RUBBER CO.

505—Metal Cutters — Bulletin 655 shows actual cost figures on various metal cutting jobs (bolt, rod, wire, chain, etc.), by using cutters, hand and power-operated cutters.—H. K. PORTER INC.

531 — Stack Maintenance — How wrought iron offers unique defense against flue gas corrosion described in bulletin "Wrought Iron for Flue Gas Conductors." —A. M. BYERS COMPANY.

536—Packing Handbook — Bulletin AD-162 details a wide variety of packings, gaskets and seals and their materials of construction and uses. Contains detailed table listing effect of numerous gases, liquids and solvents on packing materials. — GARLOCK PACKING CO.

543—Belt Clamps — Bulletin FP-1 describes new lightweight durable belt clamps that can be easily operated by only one man. Can be used for installing new belt splices or for shortening belts. — FLEXIBLE STEEL LACING CO.

595—Plant Lubrication — The Lubriplate Service Handbook —

Gives valuable information on the subject of lubrication in all its forms, intended to be of everyday use to plant superintendents, managers, maintenance engineers and those in charge of plant production and maintenance. — LUBRIPLATE DIVISION, FISKE BROTHERS REFINING CO.

material recovery, check on Whirlex Dust Collector Units. Engineering data available. — THE FLY ASH ARRESTOR CORP.

725—Cooling Tower — 32 p Bulletin DT-57-1 describes induced-draft counterflow cooling tower. Describes construction and operation of all major parts, effects or recirculation and surroundings. Illustrated. — FOSTER WHEELER CORP.

728 — Demineralization — 40 page handbook 5800-B compares various methods of water treatment, including evaporators, with demineralizers. Lists characteristics of various types of cation and anion exchange materials; includes technical data, recommends types of units to meet varying conditions. Photos and flow diagrams are shown and installation cases reported. — COCHRANE CORPORATION.

729—Refrigerant Condenser — Bulletin I31 shows benefit of panel construction in condensers with capacities from 100 to 240 tons refrigeration. Illustrations, diagrams and photos explain functions of aero-evaporative condensers with Duo-pass precooling coil and oil remover. — NIAGARA BLOWER CO.

KEEP-UP-TO-DATE

See Pages 81-82

705—Test Your Tower — Bulletin offers simple, proved method by which you can determine how closely your actual tower performance measures up to specified performance. Particularly applicable to operations geared to temperature of process cooling water. — THE MARLEY COMPANY.

710—Scale Remover — Bulletin shows how Anco Scale Remover quickly eliminates scale in boilers, water lines, refrigeration and air conditioning systems. — ANDERSON CHEMICAL COMPANY.

711—Refrigeration Condensers — Bulletin RC-2 shows how Vogt condensers step up rate of heat transfer and step down head pressures. Closed type for clean waters; film type where water is hard and forms scale. Units save power and refrigeration cost. — HENRY VOGT MACHINE COMPANY.

715 — Amine Treatment — Return line corrosion is a critical problem in maintaining economical, efficient power plant operation. Bulletin CP-100 shows how amine treatment is an easy, effective and economical way to eliminate pipe corrosion problems. — THE BIRD ARCHER COMPANY.

716 — Dust Collection — Whether nuisance elimination or process

774—Refrigerating Units — Bulletin 97-F illustrates and describes low-pressure refrigerating units. — FRICK CO.

ELECTRICAL

804 — Electronic Ground Alert — Portable & stationary units detect line-to-ground faults immediately. Available for 220, 440, 2,300 & 4,160 volt ungrounded systems. Form 255 gives details. — DELTA ENGINEERING SALES CO.

805—Power Factor Correction — 24 page catalog 50B shows how you can cut power costs by installing correction capacitors on motors and other inductive electrical equipment. Greater loads can be handled from existing circuits. Wiring, transformer and switchgear costs can be greatly minimized in new installations. — SPRAGUE ELECTRIC CO.

811—Electric Heat — "100 Ways to Apply Electric Heat" gives a wealth of information data on the use of electric heat in industry — fast, uniform, dependable, backed by nation-wide engineering service. — EDWIN L. WIEGAND CO.

825—Weather-Protected Motors — Bulletin 51B8606A describes features which contribute to outdoor dependability of company's weather-protected motors (Type FOD) in ratings from 250 to 900 hp. — ALLIS-CHALMERS MFG. CO.

MATERIAL HANDLING AIDS

600—Conveyor Idlers — Bulletin SI-116 describes pre-lubricated "UST" Conveyor Idlers. Incorporating Timken bearings and Garlock Klozures, construction permits operating without lubrication for 1-3 years or more. — CONTINENTAL GIN COMPANY.

601—Crane Runway Rails — Catalog gives information on crane rails, angle bars, crane stops, rail clips, hook and anchor bolts, bearing plates. Also specifications on various sizes of crane rail clips and explains how to order rails. — L. B. FOSTER CO.

603—Monorail Case Studies — File F-1 — Offers 20 new studies of engineered monorail applications in various industries. Factual information, complete with photos and plain drawings. — AMERICAN MONORAIL CO.

605—Rotary Feeder — 4 p booklet describes 8 pocket rotary feeder for feeding bulk materials into process lines at differential pressures up to 25 psi. The S.T.T. rotary feeder is available in 2", 4", 6", 8" and 10" sizes. — BEAUMONT BIRCH CO.

609—Automatic Control of Materials by Weight — 6 p Bulletin 0557 discusses how the Select-O-Weigh System provides complete automation in continuous or batch processing operations, including record keeping. — RICHARDSON SCALE CO.

614—Vertical Transportation — Elevator Catalog — Describes and illustrates details of passenger and freight elevators, escalators, dumbwaiters, and modernization and maintenance equipment for use in industrial, utility and service plants. — OTIS ELEVATOR CO.

620—Shaft Couplings — Bulletin 98 describes various applications of full-floating shaft couplings. Used to connect shafts that are spaced far apart. — THOMAS FLEXIBLE COUPLING CO.

622—Pneumatic Conveyor Systems — 4 page Bulletin-P58G describes many types of pneumatic conveyor systems for handling bulk materials. — NATIONAL CONVEYORS CO., INC.

626—Personnel Elevators — Industrial personnel elevators, available in 1, 2, and 4 passenger sizes (300-1000 lb capacity), described in Catalog 5A-156. Gives specifications and dimensional layouts. — J. B. EHRSAM & SONS MFG. CO.

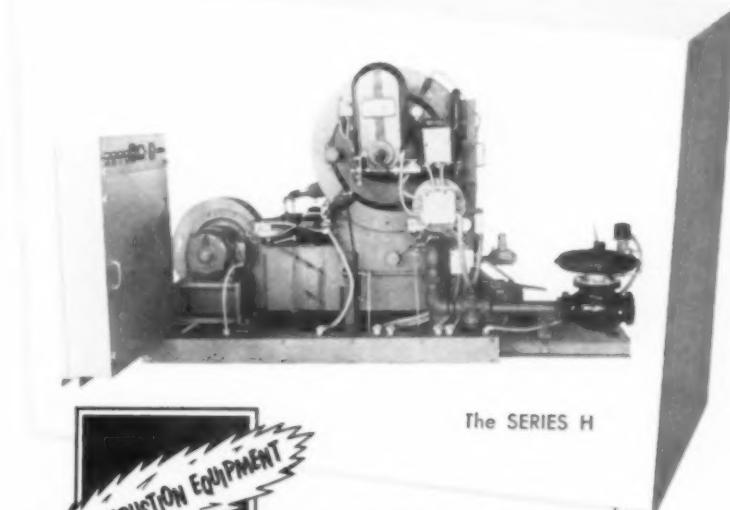
630—Mechanical Vibrating Conveyors — Catalog 890 gives information on conveyability and density of typical solid materials and provides data on how to "Do It Yourself" to get required length. — JEFFREY MFG. CO.

631—Screw Conveyors — Catalog ID-541, 68 pages — Illustrates and describes standard and special types of conveyors, with engineering data necessary for selection. Tables give sizes, types, speeds, horsepowers and

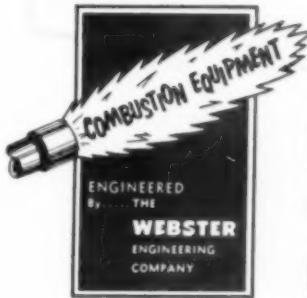
other information. Accessories included. — CONTINENTAL GIN COMPANY.

633—Shielded Electrification — Bulletin KS-1 describes "Kant Shock" for monorail and crane systems. Shielding prevents accidental contact with live bus bars. Eliminates all hazards of open bar conductors, prevents costly accidents, protects employees and reduces insurance rates. — AMERICAN MONORAIL CO.

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Company
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639—Diesel Engines — 16 p Catalog BU-413 describes two new diesel engines — Model D-344 and D-516. Includes photographs, cutaways, charts and other illustrations. — ALLIS-CHALMERS MFG. CO.

640—Belt Conveyors — Manual 909 designed to serve both expert and layman in field of materials handling by conveyor. All but the most unusual applications can be specified from the contents. — JEFFREY MFG. CO.

648—Belt Fastening Tools — Bulletins F-110 and F-111 — Describe new Flexco power tool wrenches and power tool boring punches, designed to speed up fastening of wide conveyor belts; and give recommendations on the use of various impact tools connected therewith — FLEXIBLE STEEL LACING CO.

649—Fork Lift Trucks — 16 p Catalog BU-451, "Be Years Ahead With Fork Lift Trucks" covers the FT series of lift trucks. Includes engineering, design, construction and operating story of units. — ALLIS-CHALMERS MFG. CO.

661—D-C Crane Control — 8 p Bulletin GEA-6434 features preci-

sion hoist, bridge and trolley control systems. — GENERAL ELECTRIC CO.

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X-4—Preventive Maintenance Chart

Chart offers tips to obtain maximum electric truck operating efficiency and pin-points 28 specific areas that should be inspected either daily, weekly or monthly. — LEWIS-SHEPARD PRODUCTS, INC.

X-1—Power-Matched Equipment

28 p catalog describes and illustrates Work Bull and Davis industrial equipment which offers the user a choice of power and attachments that are virtually custom-made for his operation. — MASSEY-FERGUSON INDUSTRIAL DIV.

X-2—Carrier Specifications — 6 p

folder lists condensed specifications for heavy-duty material carriers, including design, construction, and operating features, which are available in 12 different models with load-carrying capacities from 12,000 to 60,000 lb. — TOWMOTOR CORP.

X-3—Scoop & Ram Attachments

Literature describes two of many specialized attachments available with company's lift trucks. Scoops are used to handle loose material in capacities from 8 cu ft to 1 $\frac{1}{4}$ cu yd. Rams are used for transporting and stacking hollow center loads and are available in lengths from 48 to 60 in. — HYSTER CO.

X-5—Wire Rope Handbook — 36 p

handbook explains how to select the right rope, methods of socketing, splicing and installation, and important points on safety. Illustrated. — WIRE ROPE CORP. OF AMERICA.

X-6—Electric Hoists — Bulletin DH-

133D describes Speedway Electric Hoists with capacities of 500 to 4000 lb. Data on construction details, weights, dimensions, suspensions, specifications, clearances, accessibility, etc. — AMERICAN CHAIN & CABLE CO., INC., WRIGHT HOIST DIV.

X-7—Overhead Traveling Cranes —

20 p Bulletin 900 describes motor-driven and hand-gearied models of overhead traveling cranes in capacities from 1000 to 20,000 lb. Shows full specifications, including spans, clearance dimensions, electrical and mechanical specifications, capacities and weights. — ROBBINS & MYERS, INC., HOIST & CRANE DIV.

X-8—Bucket Elevator — Brochure

describes complete line of Rex Industrial Elevators, including simplified selection data. — CHAIN BELT CO.

X-9—Woven Wire Slings — Catalog

illustrates and describes Gripper Woven Wire Slings. Includes advantages, typical uses, and selection data. — CAMBRIDGE WIRE CLOTH CO.

X-10—Acid Resistant Chains — Data Sheet DH-169 describes high strength chains designed to provide optimum service in high temperature applications and solutions of sulphuric or nitric acids. Includes working load limits, high temperature properties, physical dimensions and weights. — AMERICAN CHAIN & CABLE CO.

X-11—Cost Reduction — Bulletin 52,

"Cost Reduction in Materials Handling" details advantages of overhead system of metal enclosed trolley busway electrification for cranes, hoists, stackers, etc. — FEED-RAIL CORP.

X-12—Jib Cranes — Bulletin YPP-

JC-600-B details pillar type Jib Cranes in capacities of $\frac{1}{4}$ to 6 tons, designed to rotate 360° to service entire area within its radius; pillar bracketed Jib Cranes in capacities of $\frac{1}{2}$ to 3 tons, rotating 220°; and mast type Jib Cranes in

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OF MORE DEPENDABLE POWER
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capacities of $\frac{1}{4}$ to 5 tons.—AMERICAN CHAIN & CABLE CO., INC.

X-13—Materials Handling Program — "Hand Trucks — Facts and Factors" illustrates and explains basic points to consider in setting up an efficient materials handling system. — AUTOMATIC TRANSPORTATION CO.

X-14—Magnetic Equipment — 48 p booklet, "Magnetic Ideas from Eriez," describes the many and varied applications of permanent, non-electric magnetism in modern materials handling and magnetic separation equipment. — ERIEZ MFG. CO.

X-15—Hand Truck Selection Chart — Circular 26B enables buyer to specify exact hand lift truck for his operation through an easy-to-follow selector chart which can be attached to wall for easy reference. Gives 12 basic types of hand lift trucks. — LEWIS-SHEPARD PRODUCTS, INC.

X-16—Selecting Proper Hoist — 8 p section "How To Select the Proper Hoist to Meet Your Needs" gives detailed description of 7 specific steps to take to insure the selection of the electric wire rope hoist best suited to meet your requirements. Explains the 5 most important things to consider. — AMERICAN ENGINEERING CO.

X-17—Guide-O-Matic — Bulletin 566 illustrates and describes the electronically controlled tractor that tows trucks over a predetermined route without an operator. It can also be manually operated. Routes can be altered or additions made in hours. — BARRETT-CRAVENS CO.

X-18—Truck Attachment Checklist — Catalog provides checklist for special attachments, accessories and truck options available with company's line of industrial trucks. Includes illustrations and specifications for lift trucks from 1000 to 20,000 lb, straddle carriers, yard cranes and platform trucks. — HYSTER CO.

X-19—Load Lugger — Bulletin 457 illustrates and describes the Load Lugger system of materials handling which consists of a number of detachable steel containers handled by a standard truck equipped with a specially engineered hydraulic hoist mechanism. — BORG-WARNER CORP., INGERSOLL KALAMAZOO DIV.

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SPI for OCTOBER

11th ANNUAL BETTER PRODUCTION ISSUE

. . . featuring 80 from-the-plant case studies reporting improvements in electrical systems and controls, lubrication, maintenance, water systems, power and steam generation, etc.

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- AIR CONDITIONING with precise regulation of air temperature and air moisture for processing, for product drying, packing, storing, low temperature conversion, for testing and research.
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- COOLING ENGINES, COMPRESSORS, HYDRAULIC PRESSES.
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- VAPOR CONDENSING UNDER VACUUM.
- REFRIGERANT CONDENSING.
- ELECTRONIC PROCESS COOLING.

You will reduce your costs, solve your problems of water supply or disposal and get HIGH OPERATIONAL EFFICIENCY with Niagara "Aero"



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No. 135

Evaporative Heat Exchangers, After Coolers, Condensers, Air Conditioners or Coolers for these important plant services.

High operational efficiency means: precise temperature for improved product and process quality control, heat removal at rate of input, simple operating conditions, real economy in upkeep, sustained full capacity. It means the lowest expense for up-keep.

Write for Bulletin 135

NIAGARA BLOWER COMPANY

Dept. SP-7, 405 Lexington Ave., New York 17, N.Y.

Niagara District Engineers in Principal Cities of U.S. and Canada

Southern News Briefs — Continued from Page 26

Yale & Towne — Tex.

Briggs-Weaver Machinery Company, a Yale hoist distributor for more than 15 years and one of the largest industrial supply houses in Texas, has been named franchise representative for Yale industrial lift trucks and tractor shovels for North Texas from its Dallas headquarters office, according to an announcement by Clyde R. Dean, Jr., General Sales Manager, Yale Materials Handling Division, **The Yale & Towne Manufacturing Co.**

Service facilities and a complete inventory of factory-approved replacement parts will be maintained at the headquarters located at 5000 Hines Blvd. in Dallas.

The Materials Handling Department of Briggs-Weaver is headed by **James R. Shannon** who has spent more than 25 years in the sales and engineering of materials handling equipment. **John Sommers** is in charge of the service department.

Cambar — Fla.

A new Warehouse arrangement between **The Cameron & Barkley Co.** and **The Dayton Rubber Co.** has been announced by R. C. Barkley, Jr., Cambar's Executive Vice President, Sales.

The Cameron & Barkley Co. has also been appointed an authorized distributor for Dayton V-Belt Drives with complete stocks for general industrial service.

Dayton's Florida industrial coverage will be directed from Tampa where **C. E. Darkus**, district manager, will maintain his office.

The Cameron & Barkley Co. now has six branches in Florida, located at Jacksonville, Tampa, Miami, Orlando, Cocoa Beach, and Mulberry. There are also branches in Charleston, S. C., and Savannah, Ga. with new locations planned under the Company's expansion program. Executive offices are located in Jacksonville.

Dowell Inc. Becomes Div. of Dow Chemical

Dowell Incorporated, a wholly owned subsidiary of **The Dow Chemical Company**, has become a division of Dow.

There will be no changes in the present management of the new division and all operations of the large service organization will continue to be directed from the General Offices in Tulsa.

C B & I — Ala.

Dean A. Miller, manager of **Chicago Bridge & Iron Company's** Birmingham (Alabama) sales office, has retired after 39 years of service with the company.

Mr. Miller started his C B & I career at the company's main office at Chicago in 1919. Five years later he moved to the New York office as a contracting engineer. He was transferred to the Dallas sales office in 1925 and to the Birmingham sales office in 1933.

correct power factor at the load



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UNIPAK^{*} CAPACITORS

Sprague's complete selection of Unipak Capacitors in sizes from $\frac{1}{2}$ to 15 KVAR makes it easy to install the right rating at the right spot . . . at the motor! Each is completely self-contained . . . requires no additional switches or fuses. Unique Sprague unit cell construction gives you maximum reliability, long term trouble-free service.

Write for complete information in Bulletin PF-1150, available free on request to Industrial Capacitor Division, Sprague Electric Company, 49 Marshall Street, North Adams, Massachusetts.

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LEWIS
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BULLETIN 143



THRU YOUR DEALER OR DIRECTLY FROM

CHAS. S. LEWIS & CO., INC.

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Southern Co.—Birmingham

The Southern Company has announced the transfer of **T. Hunt Vaden**, one of its vice presidents, from Atlanta to Birmingham.

Mr. Vaden will be associated with **J. M. Barry**, Chairman of the Executive Committee, and **James F. Crist**, Vice President, in the management of Southern's offices in Birmingham.

Mr. Vaden is well known in Alabama, having served with the Alabama Power Company in various engineering and executive capacities from 1923 through 1952, when he was elected to a vice presidency of The Southern Company and assigned to its Atlanta office. Important posts held by him with the Alabama Power Company included that of Division Superintendent at Montgomery from 1928 through 1942, and that of Division Manager at Anniston from 1946 through 1952.

Ft. Worth Steel — Tenn.

Power Drives Incorporated, 700 Dale Ave., Knoxville, Tenn., has been appointed a distributor of "Fort Worth" mechanical power-transmission equipment, products of **Fort Worth Steel & Machinery Company**, Fort Worth, Texas.

The newly-established Knoxville firm, specializing in power-transmission and bulk-materials-handling equipment, serves industry in **Eastern Tennessee** and portions of **Kentucky** and **North Carolina**.

"Fort Worth" products stocked and offered by Power Drives include a wide variety of V-belt sheaves and V-belts. The firm designs and furnishes complete drives, both electrical and mechanical, from its own stocks.

Power Drives Incorporated was founded April 1 by **R. K. Heim**. Other key members of the organization are **Nic L. Knoph**, vice president, and **James C. Gillentine, Jr.**, sales engineer.

J. E. Rhoads — Atlanta

J. E. Rhoads & Sons, Wilmington, Delaware, manufacturers of leather, leather-plastic, and all-synthetic flat belting for power transmission, has appointed **J. Warren Mitchell** as Southern manager with headquarters in Atlanta.

Norton — Georgia

Norton Company has appointed **Thomas M. Hankin** as a field engineer in the Company's Atlanta office.

Du Pont Silicon Plant Operating

The country's first full-scale silicon plant, located on a 10,500 acre site near **Brevard, N. C.** is now in full production. **Leslie S. Grogan** is manager of the new **Du Pont Co.** plant, being operated by the Pigments Department and employing over 200. The huge site, in the western tip of North Carolina offers protection from airborne contamination from industry or agriculture.

Plant will produce annually about 50,000 lb of semi-conductor grade silicon and 20,000 lb of "solar-cell" grade silicon. The former material is used in the manufacture of transistors, diodes and power rectifiers; the latter is used in "solar batteries."

Pyramid Electric Moves to Carolina

Although the firm's sales and accounting departments will remain in North Bergen, New Jersey, **Pyramid Electric Company** has moved all manufacturing facilities for tantalum and other special capacitors into a new 250,000 sq ft Darlington, S. C. plant. Company also produces radio and television capacitors of a commercial variety in an established Gastonia, N. C. plant.

A. M. Lockett — La.

A. M. Lockett & Co., Ltd. has announced the promotion of **Joseph J. Ranna** to District Manager of the New Orleans District.

Replacing Mr. Ranna as Assistant District Manager is **G. Michael "Mike" Baccich**, formerly Resident Sales Engineer at Baton Rouge.

Both men are graduates of Tulane University and both joined the Lockett organization in 1947.

SHOP TIP

For an Easier Way to Remove Packing

Here is a rugged, flexible, hand-tool that "works around corners" for removing old packing from stuffing boxes. The picture above shows how Dura Hooks operate around obstructions. All steel—tempered steel cork-screw bit—made in 6 sizes—nominal in price.

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covering sizes and prices.

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CORPORATION
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The PERFECT SEAL

Southern News Briefs (Continued)

Cambar — Jacksonville

The appointment of William L. Powers as Manager of The Pipe & Valve Supply Division for **The Cameron & Barkley Co.** has been announced in conjunction with the Divisional and Regional expansion program recently set up at Cambar.

Mr. Powers comes to Cambar after 5½ years with Manning, Maxwell & Moore, Inc., as Sales Correspondent in Stratford, Conn., Office Manager in Atlanta, Ga., and Sales Engineer, working out of Savannah, Ga.

In addition to actively working with the salesmen at Cambar's eight branches, Mr. Powers' specialized training and experience will be available at all times to any industrial plant or individual job where his background of piping, valve, and instrumentation knowledge can assist with technical problems encountered. This technical customer-service is one of the many features offered by Cambar's Pipe & Valve Supply Division.

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2512 So. Blvd., Houston 6, Tex.

Olin Mathieson — Md.

Harry M. Walton, Jr. has been appointed Baltimore, Md. branch sales manager for the Aluminum division of **Olin Mathieson Chemical Corporation**. He had been industrial sales representative in the Baltimore office.

AAF — La.

Fred M. Erickson, New Orleans, (5705 St. Roch Ave.) has expanded his representation of **American Air Filter Company** products to include Herman Nelson classroom unit ventilator products and Herman Nelson heating and ventilating products.

In addition to the above, Erickson now represents AAF's air filter, dust control, engine and compressor, and Illinois Engineering heating specialties products.

Lovejoy Acquires Hi-Lo Mfg. Co.

Lovejoy Flexible Coupling Co., Chicago, Ill., leading producer of power transmission equipment, has acquired controlling interest in **Hi-Lo Manufacturing Co.** of Minneapolis, Minn., to become one of the world's largest manufacturers of variable speed pulleys.

Hi-Lo Manufacturing Co., successor to Equipment Engineering Co. which was founded in 1936, will continue operations in Minneapolis under the presidency of V. G. Nordley, son of the founder. He will also serve as a director, as will Patrick Hennessy and Fred M. Allen of Lovejoy Flexible Coupling Co.'s home office in Chicago. Sales headquarters will be in Chicago.

Trane — Tex. & Ky.

New firms have been appointed authorized sources of Trane package air conditioning equipment — Home Maintenance Co. and Beatty Engineering Co., Dallas; Air Conditioning Co., Newport, Kentucky; and Hettinger & Shuck, Louisville, Kentucky.

F. J. Evans — Cyclotherm Distributor

The F. J. Evans Engineering Company, Inc. home office located in Birmingham, Ala., has been appointed as a sales distributor for **Cyclotherm Division**, National-U. S. Radiator Corp., Oswego, N. Y.

Since its founding in 1927 by F. J. Evans, other regional or district offices have been established in the nine states in which the company operates, including Atlanta, Houston, Columbia, South Carolina, and Jackson, Mississippi. A new regional office was opened this year in Memphis, Tenn. In addition to these company offices, other sales representatives or agents of the company are located in eight major cities of the South.

The company handles a line that covers the complete heat treating and industrial metal processing field including all industries up to and including the steel industries on heat processing and heat treating furnaces.

The officers of the corporation include: **F. J. Evans**, president and treasurer; **Nelson B. Buehrer**, executive vice president and secretary; **J. K. Hawk**, vice president in charge of engineering; **J. J. Tyson**, vice president in charge of Atlanta division; **D. M. Mills**, vice president in charge of Memphis division; and **C. C. Heim**, assistant vice president in charge of heating and air conditioning division in Birmingham.

Bernard Johnson—Houston

William P. Cornelius recently joined the staff of **Bernard Johnson & Associates**, Consulting Engineers, in Houston. Mr. Cornelius is a registered Professional Engineer in Texas and will assume his new duties in the Industrial section of the firm.

For the past 8 years, Mr. Cornelius has been the General Manager of the Houston Office of Giffels and Vallet, Inc., a consulting firm from Detroit, Michigan. While with Giffels and Vallet, Inc., he directly supervised the design of various projects in the Gulf Coast area.

Bernard Johnson & Associates is a firm of approximately 40 engineers and designers. It was established in 1947 and has actively engaged in industrial, commercial, and governmental projects involving all phases of civil, mechanical and electrical engineering.

General Rubber South & Southwest

General Rubber Corporation, Tenafly, N. J., has announced the appointment of two new exclusive sales distributors in the southwest for the GRC line of rubber expansion joints, spool pieces, reducers and flexible pipe.

The Paul-Condit Company, Inc., P. O. Box 10094, Houston 25, Texas, will service eastern Texas, the entire State of Louisiana and the southern portion of Mississippi, with six trained sales engineers operating out of offices in Houston, Texas, Dallas, Texas and Baton Rouge, Louisiana.

The Landes, Zachary & Peterson Company of Texas, 1900 Mills St., El Paso, Texas, will service western Texas and the entire states of Arizona and New Mexico, with four sales engineers operating out of their main office in El Paso.

Both companies are well known in industry and have experienced sales engineers familiar with all phases of pressure and vacuum systems involving water, brine, air, gases and chemicals.

J. F. Pritchard—Southwest

J. F. Pritchard & Co. of Kansas City, Mo., an engineering, design, and construction firm, has appointed **Frank S. Sawyer** as Manager of Construction. Mr. Sawyer comes to Pritchard with 40 years experience in the construction industry.

The company has also announced that **W. H. MacKay** has retired as District Manager of the Houston, Tex. office, and is succeeded by **R. H. Bradley**.

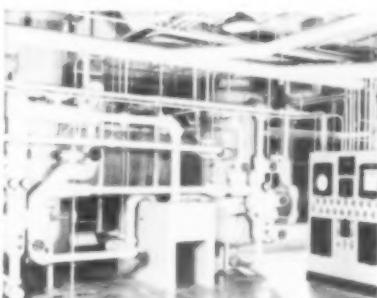
C B & I — Houston

Chicago Bridge & Iron Company, Chicago, has announced the movement of its Houston Erection District facilities to new quarters on an 85-acre site northeast of Houston, Tex.

The Houston Erection District facilities — including a warehouse, maintenance and field construction equipment, plate rolls, edge preparation equipment and a crane runway — were formerly located on a three-acre tract on Clinton Drive, Houston.



De-ionized Water FOR



POWER PLANTS

One of the greatest advancements in recent years has been the successful development of the de-ionization process for the purification of boiler feed water in power plants. This development has been particularly important with modern high-pressure boilers where virtually complete removal of silica is vital. Illinois Water Treatment Company has pioneered in the practical design and reliable manufacture of such water-treating equipment.

SAVES MONEY IN LOWERED COSTS

Power plants which have installed this equipment have done so on an investment basis, and are today enjoying good returns in the form of greater operating efficiency, much less maintenance, and substantially lower steam costs. Compared with other methods of treatment for boiler feed water, ILLCO-WAY ion-Xchange will usually be found to offer the lowest overall expense coupled with the best performance. For details, call your ILLCO-WAY representative, or write . . .



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NEW YORK OFFICE: 141 E. 44th St., New York 17, N.Y.
CANADIAN DIST.: Pumps & Softeners, Ltd., London, Ont.

Carlon — N. C.

Carlon Products Corporation, Cleveland, Ohio has announced that **John I. Rudge** has been elected a Vice President of Carlon responsible for the Southeastern District.

Mr. Rudge makes his headquarters at Asheville, N. C. where Carlon has the largest plant for the production of plastic pipe on the East Coast. He has been with Carlon over ten years and was one of the pioneers in plastic pipe for farm, well and industrial use in the United States. He was formerly president of the West Virginia Pump and Supply Co. of Huntington, West Virginia.

Air Preheater — Dallas

The sales and service office in Dallas of **The Air Preheater Corporation**, manufacturer of heat exchange equipment, has located in the new Mercantile Dallas Bldg., according to **R. W. Smith**, manager of the office. The Dallas office serves an area including Texas, New Mexico, Arkansas, Oklahoma and western Louisiana as well as Mexico.



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Southern News Briefs (Continued)

T&B Acquires Kent

The Thomas & Betts Co., Elizabeth, N.J., has acquired the **Kent Mfg. Corp.** of Newton, Mass., engineers and manufacturers of a line of electrical terminals in continuous strip form and related attaching machines for the automotive, electrical and appliance industries.

Marketing of Kent products will be handled by a division of The Thomas & Betts Co. sales department consistent with T&B's established plan of distribution through the electrical wholesaler.

Officers of T&B's new subsidiary are: N. J. MacDonald, president and treasurer; C. A. Badeau, executive vice president; and H. D. Batcheller, vice president and general manager.

Mr. Badeau is administrative vice president and chief engineer of T&B. Mr. Batcheller is founder of Kent and is the inventor of the push-on-disconnect wire terminal.

Hydraulics Div. of Brown & Sharpe

The hydraulic pump and fluid motor business of the **Gerotor-May Company** of Baltimore, Maryland has become a part of the Hydraulics Division of the **Brown & Sharpe Manufacturing Company** of Providence, Rhode Island.

The move is regarded as a major step forward in the full scale development of the Division since Brown & Sharpe will now be in a position to provide completely engineered hydraulic circuits for the industrial field, built exclusively of components of its own manufacture.

Comprising the Gerotor fluid power pump line are single and double units with capacities from .4 to 40 gpm at pressures up to 2,000 psi.

Century Electric — Mo.

Baker Terry has been appointed St. Louis Branch Office manager of the **Century Electric Company**. Mr. Terry succeeds R. A. Jervis who was transferred to Tulsa, Okla.

Mr. Terry, an application engineer, has been with Century since 1948. He has worked in the St. Louis Sales Office since that time.

Felker Brothers — La.

Edwin J. Orgeron, 82 West Claiborne Square, Chalmette, Louisiana, has been appointed representative for the Felker Brothers Manufacturing Co., Marshfield, Wisconsin, manufacturers of tubing, pipe, and fittings, and custom fabrication. Mr. Orgeron has 10 years sales experience in the metals field, specializing in stainless steel and the higher alloys. His entire experience covers promotion and sale of metals to the pulp, paper, and chemical industries in the South and Southwest.

Hagan Acquires Kybernetes Corp.

To further strengthen its competitive position in the instruments and controls field, **Hagan Chemicals & Controls, Inc.**, Pittsburgh, has acquired the name and tangible assets of **The Kybernetes Corporation**, New York City.

Kybernetes, formerly a subsidiary of Self Winding Clock Company, Inc., manufactures automatic data logging and temperature monitoring equipment for industry.

Fitzgibbons Establishes Fab. Plate Prod. Div.

The **Fitzgibbons Boiler Co., Inc.** has established a Fabricated Plate Products Division. Designed to make more effective use of expanded plant and operations facilities at its Oswego, N.Y. manufacturing headquarters, the new division will devote its attention to the production of pressure vessels, condensers, heat exchangers and similar special products.

Heading up Sales of the new division is **Raymond K. Strayer** who joins the organization from his position as Manager of Sales for Posey Iron Works. Mr. Strayer brings with him a background of 32 years of sales and engineering experience in this field.

Elvin T. McDivitt fills the position of General Estimator and Assistant to Sales. He, too, was with Posey Iron Works and has 27 years experience in this field.

Yale & Towne — Va.

The S. L. Cooper Company, Washington, D. C., has increased its sales coverage in the State of Virginia for Yale industrial lift trucks with the opening of an office in Roanoke, the company's fourth in the state.

The new Roanoke office, located at 3204 Williamson Road, N. W., Roanoke 12, will be in charge of **A. O. Gribble**, a veteran of more than seven years in lift truck sales and service.

Gribble has been associated with the Cooper Company for more than a year in the Richmond territory and had previously been employed at the Yale Sales and Service Branch in Cincinnati, Ohio, for six years.

Anderson Electric — Ala.

Robert L. Lock, Vice President in Charge of Engineering at **Anderson Electric Corporation** of Birmingham, recently was also appointed Research Director of the corporation.

The appointment was made as a part of Anderson's increased research program. This program, entailing development of new products and redesign of previous products, will be further expanded upon completion of two new laboratories; one for study of mechanics and corrosion, and the other for electrical research.

Mr. Lock will also supervise Anderson outside research projects being conducted at present by Auburn Research Foundation, Southern Research Institute, and Mississippi State College.

Fulton Sylphon — Tenn.

Fulton Sylphon Division of Robertshaw-Fulton Controls Company has opened a product development laboratory in **Knoxville, Tennessee**.

The new laboratory is a section of the Fulton Sylphon engineering department under the general direction of **L. M. Puster**, director of engineering.

Research and development activity will be devoted exclusively to the creation of new products for present and future markets. The laboratory is under the supervision of **J. P. Wagner**, chief project engineer.

Midwest Piping Pres.

O. P. Carter has been elected president of the **Midwest Piping Company, Inc.** with headquarters in St. Louis, Mo. He was executive vice president for the last 2½ years and succeeds Eric A. Kerby who died recently.

Before returning to St. Louis as executive vice president, Carter was manager of the company's New England Division and East Coast Construction for 10 years. During the building of the atomic energy plant at Oak Ridge, he was chief engineer of the Midwest operations there. He has been with the company 28 years, starting as sales engineer.

Exide Battery Expansion

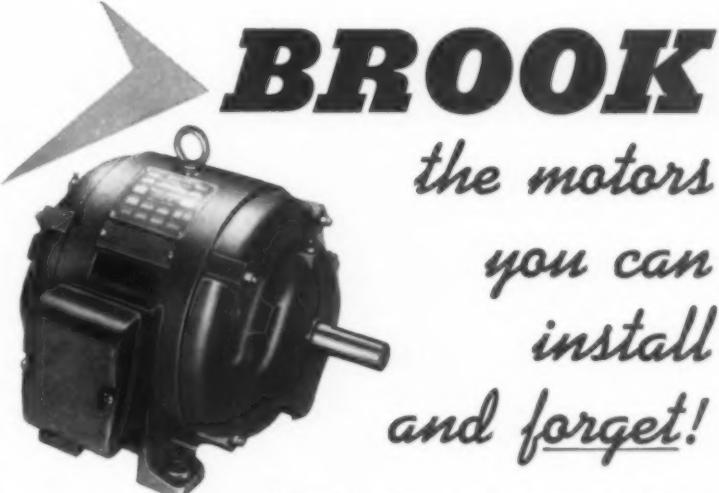
Exide Industrial Division of the Electric Storage Battery Company, Philadelphia, has announced a planned expansion of its system of regional service stations and warehouses, as part of an overall pro-

gram to provide customers with improved service on industrial battery products.

The new post of supervisor of service stations and warehouses has been created in the division's service engineering department for the purpose of spearheading the national program. **Charles L. Eberhardt, Jr.**, former manager of Exide's Boston depot, has been appointed to the post.

Milton Roy To Make Oliver Slurry Pumps

Robert T. Sheen, President, **Milton Roy Company**, Philadelphia, Pa., has announced that **Dorr-Oliver, Incorporated**, has licensed his company to manufacture and market small and miniature designs of the Oliver Diaphragm Slurry (ODS) Pump for extremely accurate proportioning applications in the United States. Under the license, Milton Roy Company will have exclusive rights for the production of ODS pumps in sizes to approximately two gpm.



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FUTURE EVENTS of Engineering Interest

Aug. 7-9: North Carolina Hospital Engineers Association, Inc., Annual Convention, Sir Walter Hotel, Raleigh, N. C. Henry W. Miller, Pres., NCHEA, Oteen, N. C.

Aug. 20-22: Hydraulics Conference, American Society of Civil Engineers, Atlanta Biltmore Hotel, Atlanta, Ga. Pub. Rel. Dept., ASCE, 33 West 39th St., New York 18, N. Y.

Sept. 15-17: American Institute of Electrical Engineers. Petroleum Industry Conference, Baker Hotel, Dallas, Tex.

Sept. 15-17: Process Industries Conference. American Society of Mechanical Engineers, Statler Hotel, Buffalo, New York.

Sept. 18-21: 40th Annual Meeting. Public Utilities Association of the

Virginias, Greenbrier Hotel, White Sulphur Springs, W. Va. R. W. McKinnon, Exec. Secy., PUAV, 602 First Federal Bldg., Roanoke, Va.

Sept. 28-Oct. 1: Power Conference, American Society of Mechanical Engineers, Statler Hotel, Boston, Mass.

Sept. 29-Oct. 3: American Society of Tool Engineers. Semi-Annual Meeting & Western Tool Show, Shrine Exposition Hall, Los Angeles, Calif.

Oct. 6-10: Southern Textile Exposition; Textile Hall Corp.; Textile Hall, Greenville, S. C. H. H. Lesesne, 434 Palmetto State Life Bldg., Columbia 1, S. C.

Oct. 9-10: 21st Annual Joint Solid Fuels Conference. ASME-AIME,

Hotel Chamberlin, Old Point Comfort, Va. Carl S. Dennis, Chm., Va. Section, ASME, The Chesapeake & Ohio Railroad Co., Richmond, Va.

Oct. 13-15: National Electronics Conference. 14th Annual Forum on Electronic Research, Development, and Application, Hotel Sherman, Chicago, Ill. R. E. Hornacek, Pub. Committee Chairman, NEC, c/o Ill. Bell Telephone Co., 208 West Washington St., Chicago 6, Ill.

Oct. 14-16: 13th Annual Exposition. Society of Industrial Packaging & Materials Handling Engineers, Coliseum & Morrison Hotel, Chicago, Ill. G. Cornwall Spencer, 327 S. LaSalle St., Chicago 4, Ill.

Oct. 20-21: Southeastern Electric Exchange, Engineering & Operation Section, Hotel Roanoke, Roanoke, Va.

Nov. 4-8: 39th Annual National Metal Exposition & Congress, American

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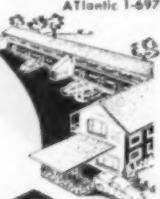
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Society for Metals, International Amphitheatre, Chicago, Ill. W. H. Eisenman, Secy., ASM, 7301 Euclid Ave., Cleveland 3, Ohio.

Dec. 1-3; Semi-Annual Meeting.
American Society of Refrigerating Engineers, Hotel Roosevelt, New Orleans, La.

Dec. 1-5; 23rd National Exposition of Power & Mechanical Engineering. American Society of Mechanical Engineers, New York Coliseum, New York, N. Y. E. K. Stevens, Pres., International Exposition Co., 480 Lexington Ave., New York 17, N. Y.

Incinerators

MAINTENANCE of incinerators can be and often is reduced to an extremely minor matter by proper operation. After all, we are operating a piece of equipment that is free from moving parts and where it is operated properly, maintenance can be surprisingly low.

Proper operation would involve first the removal of all ash and non-combustibles, both above and below the grates at the start of operation.

Secondly, loading should be in smaller amounts so that you can control the heat release at any particular time, and most important from an operational standpoint so that large clumps of material do not tend to ball up in the fire bed and need stirring or stoking to break them apart for completion of burning.

Wet wastes, food residues, can be most easily consumed by mixing them as much as is practical with dry wastes, which will provide fuel and voids in the firebed and permit cleaner burning. This can be done at the collecting point by throwing the wastes, wet and dry, into the same container, by alternating the loading of wet and dry, or by putting in only part of the wet waste container at one time. Spreading the wet and damp waste out as much as possible in loading helps maintain a thinner fuel bed and produces one that burns more brightly and cleanly.

Where dense masses of heavy wastes need to be loaded at one time they should be put into a portion of the furnace where they can be exposed to heat from the dry waste or the auxiliary burner.

Furnace operation can also be improved by permitting the wastes to burn down well between loadings. This avoids getting fresh wastes into the half-ashed previous charges and insulating the wastes so that they do not burn properly. Ashing the furnace in the morning after it is cooled down overnight is the easy way to do so.

Grates & Lining

Probably the most important thing to do from a maintenance standpoint is to avoid grate damage by proper ashing and also by prompt repair of any minor grate faults.

The grate, in a sense, is a filter between the fuel bed and the ash pit. When it has a defect in it of a size as to permit wastes to fall through the filter area into the

ash pit, these wastes, when burning, subject the grate to excessive heat. We can use cast iron grates in an incinerator as the filter as long as the air for combustion is passing through the grates, keeping them cool. When wastes fall into the ash pit and burn there, they overheat the grates and hence we have maintenance. Replace any defective part promptly.

The lining of the incinerator is masonry and repairs can be made from parts carried by local firebrick distributors. Again, masonry repairs to the lining should be done promptly where defects occur. The high temperatures produced in an incinerator by the wastes, and the intensity of these temperatures that occur within the incinerator of modern design in an effort to get clean burning, mean that the firebrick is subjected to very high temperatures.

The firebrick can stand it, but the facing of the incinerator will not. As a result, a small defect in the firebrick lining quickly per-

REDUCE OPERATING COST of VACUUM SYSTEMS with this "AERO" (air-cooled) VAPOR CONDENSER

With free air the cooling medium, you use the least water, evaporated in the air stream. You save the cost and pumping of large volumes of condensing water.

Air-vapor subcooling reduces mixture evacuated from the system, saving in the operation of steam ejector or vacuum pump.

This air-cooled condenser gives you more capacity than other types at a substantial saving of steam and power. Water supply, scaling treatment and disposal problems are eliminated.

You get pure condensate, an improved product; often profit by recovery of residues now wasted. There can be no contamination of your product at any time; it never touches raw water. Condensing, of water, of solvents or of your product, is simplified; you have one, compact, easily maintained unit replacing both cooling tower and barometric or surface type condenser.



Niagara Aero Vapor Condenser Panel Casing construction gives access to all parts, saves first costs in shipping and installation.

Maintenance expense is low. Niagara Aero Vapor Condenser Panel Casing construction gives access to all parts, saves first costs in shipping and installation. Summer-winter dampers and Balanced Wet Bulb Control provide precise, year 'round adjustment of capacity to load.

Constant temperature, uniform products and maximum production 12 months a year are assured. Capacities up to 15 million BTU/hr.

Write for full information. Ask for Bulletin 129R

NIAGARA BLOWER COMPANY

Dept. SP-7, 405 Lexington Ave., New York 17, N.Y.

Niagara District Engineers in Principal Cities of U. S. and Canada

mits the heat to work on the facing, thus damaging it. Proper maintenance will suggest that these defects be taken care of promptly. Many masons specialize in firebrick work and can handle it very satisfactorily, some heating contractors and specialty contractors are well acquainted with firebrick repair work.

The auxiliary fuel equipment, gas or oil burners, that may be used on incinerators for consuming wet wastes, rubber, plastic, or other special wastes, are made of standard components and can be maintained just as the similar burners would be on other appliances.

Look at the burner equipment on your incinerator and see how the flame enters the chamber. Keeping ashes down will keep the temperatures at the burner vicinity down. When loading, care should be taken to keep the burner inlet vicinity from being plugged up by a heavy dense mass of charge material.

Excessive poking of the masonry while stirring, stoking, etc., should be avoided. By hitting a wall of firebrick with the firing tools day after day, the lining of an incinerator will be damaged.

By BOB WELLSTEAD, Brule (Bru-Lay) Incinerator Corporation.

revised system is without any joints or cracks since the application of proper heat re-establishes the same original monolithic structure due to the thermoplastic character of the material.

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SERVES plant managers, superintendents, engineering department heads and plant operating staffs.

PROVIDES information to solve design, installation, operating and plant maintenance problems.

Underground Pipe Insulation

AN ALABAMA metals plant and a

North Carolina college had similar problems to overcome in conjunction with their newly designed underground steam piping systems.

They both wanted systems that would be free from excessive heat loss and still minimize maintenance expense. It was essential that the initial installation cost be the lowest possible and still be flexible enough to permit future changes without placing the original lines in jeopardy. Dependability of uninterrupted service was necessary to each. The greatest protection possible from corrosive soil condition was vital.

After investigation, the G. S. Ziegler Tri-Sul-Ite 3 Way Protection System was chosen. Tri-Sul-Ite is a specially selected, granulated gilsonite, chemically inert and highly resistant to corrosive elements normally found in soil. Although it is an excellent insulator, it has no affinity whatever for water. Being granular its ability to cushion shocks permits shallow installations. The reasonable cost of the material along with the other qualities were the controlling factors that induced each of them to make the same choice.

The Tri-Sul-Ite was poured in dry granular form around and

under the pipes, tamped, and then properly cured by heat. Soil only was used to contain the material. Curing produced three zones of protection. The first zone was plastic adjacent to and adhering to the pipe. This adhering material creates a coating around the pipe to prevent electrolytic or chemical corrosion and to prevent water from any source from following the grade of the pipe. This water barrier is vital in minimizing pipe maintenance.

The plastic zone is a good insulator but only about half as good as the other two zones. The second zone is next to the plastic material and the heat transfer has been lowered to the point that only the edges of the granules fuse thereby isolating the air spaces — an excellent insulator. The loose and unfused granules of the third zone not only provide a fine insulating value but have a remarkable ability to resist water penetration.

Any escaping steam from defective pipe or welds creates a plastic material to the ground surface which is visible and easily detected and repaired, without damage to the rest of the run as there is no housing to confine the steam or condensate.

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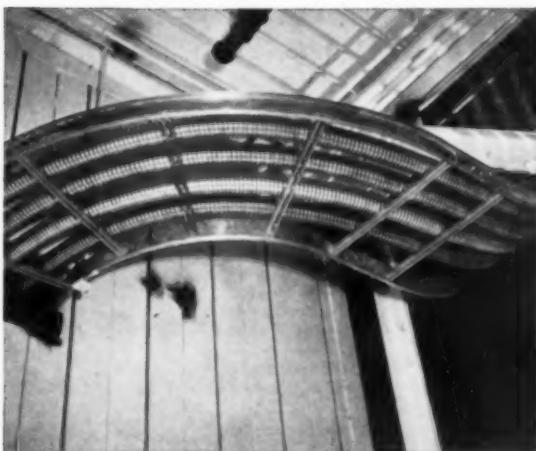
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WILSON **TUBE** **MAINTENANCE TOOLS**

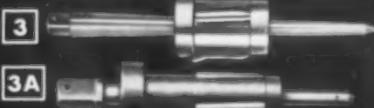
1 Air driven tube cleaners



2 Self-feeding tube expanders

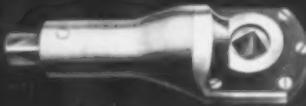


Model E Expanders



4

Right angle bevel gear drive



1 Heavy-duty air driven tube cleaners are designed to deliver maximum power at the most efficient cutter head speeds while negotiating sharp bends, the Model ECT Air Cleaners are excellent for cleaning curved boiler tubes from 2½" to 4½" O.D.

2 Wilson Model 38 tube expanders are self-feeding and parallel expanding. They are of the single flare roll type. Available for tubes 1" O.D. to 4½" O.D. with various roll lengths for tube seats ¾" and up.

3 Flaring type expander 1" O.D. to 4½" O.D. tubes, ½" to 2" tube seats.

3A Long reach type expander 1" O.D. to 4½" O.D. tubes, 2½" to 5" tube seats.

4 This Wilson bevel gear drive is expressly manufactured to meet continuous and heavy duty service conditions. The one piece all steel body is extremely rigid and not subject to distortion. The maintenance of perfect gear alignment is assured with consequent long service life.

Write today for your copies of Wilson Tube Cleaner catalog No. 77 and Wilson Tube Expander catalog No. 88.

TW-882

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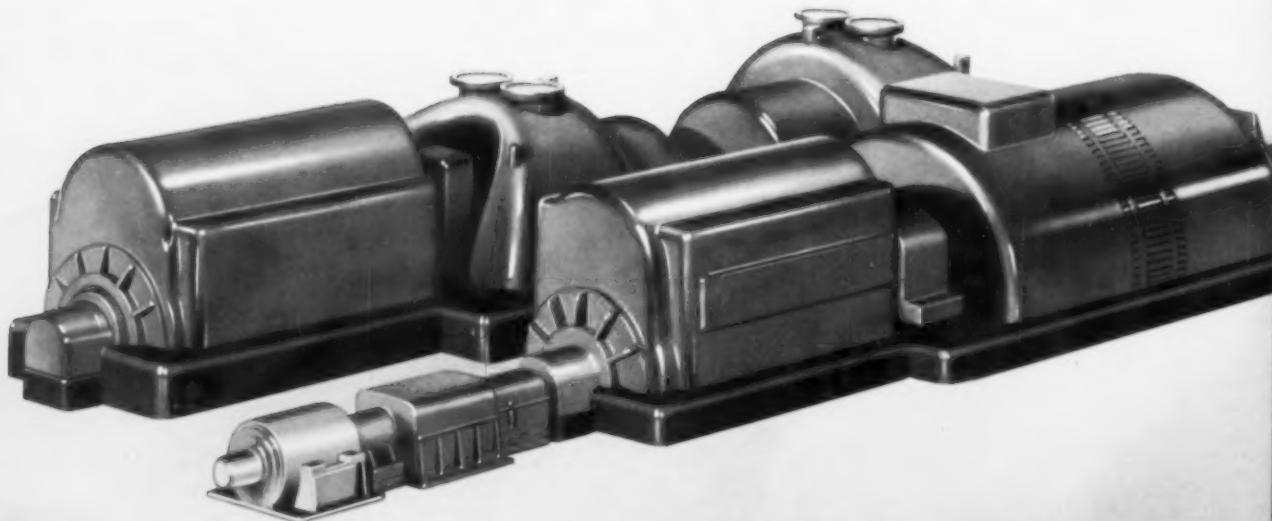
Power Plant Pumps

A PUMP FOR EVERY POWER PLANT NEED

- BOILER FEED DUTY
- CONDENSATE PUMPS
- CIRCULATING PUMPS
- STATION AUXILIARY PUMPS
- SPECIAL DESIGNS
- NUCLEAR FLUIDS

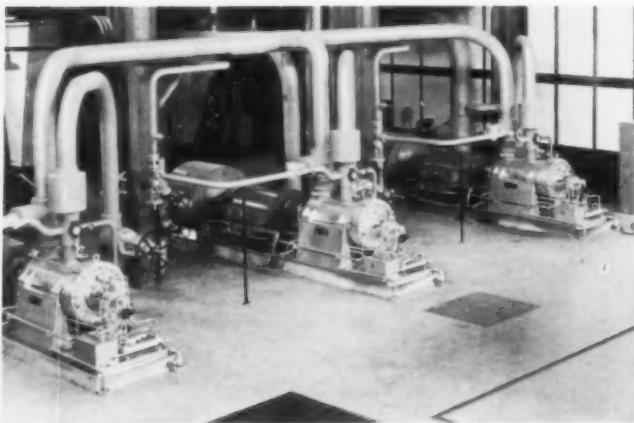
BJ

*...one reliable source for
all power pumping requirements*



12,000 hp, 3600 rpm Double-Case Boiler Feed Pump

Typical of the advanced engineering and design of Byron Jackson pumps is this unusual double-case, high-pressure boiler feed pump. Through a unique arrangement the pump is directly driven from the main generator shaft. It will deliver feed water at 6330 gpm against a 6400 foot total dynamic head.



DOUBLE CASE BOILER FEED PUMP — Reliability, simplicity and ease of maintenance have been emphasized in this BJ design. The result is a highly efficient pump in which complete confidence can be placed. Sizes and capacities are available as required.

VERTICAL DOUBLE CASE PUMP

The advantages of the double-case design are featured in this compact, vertical pump. For high-pressure, high-speed with low capacity, or operated in series of two or more for higher performance. Capacities are from 20 to 500 gpm with heads from 50 to 500 feet per stage (to 5000 psi).



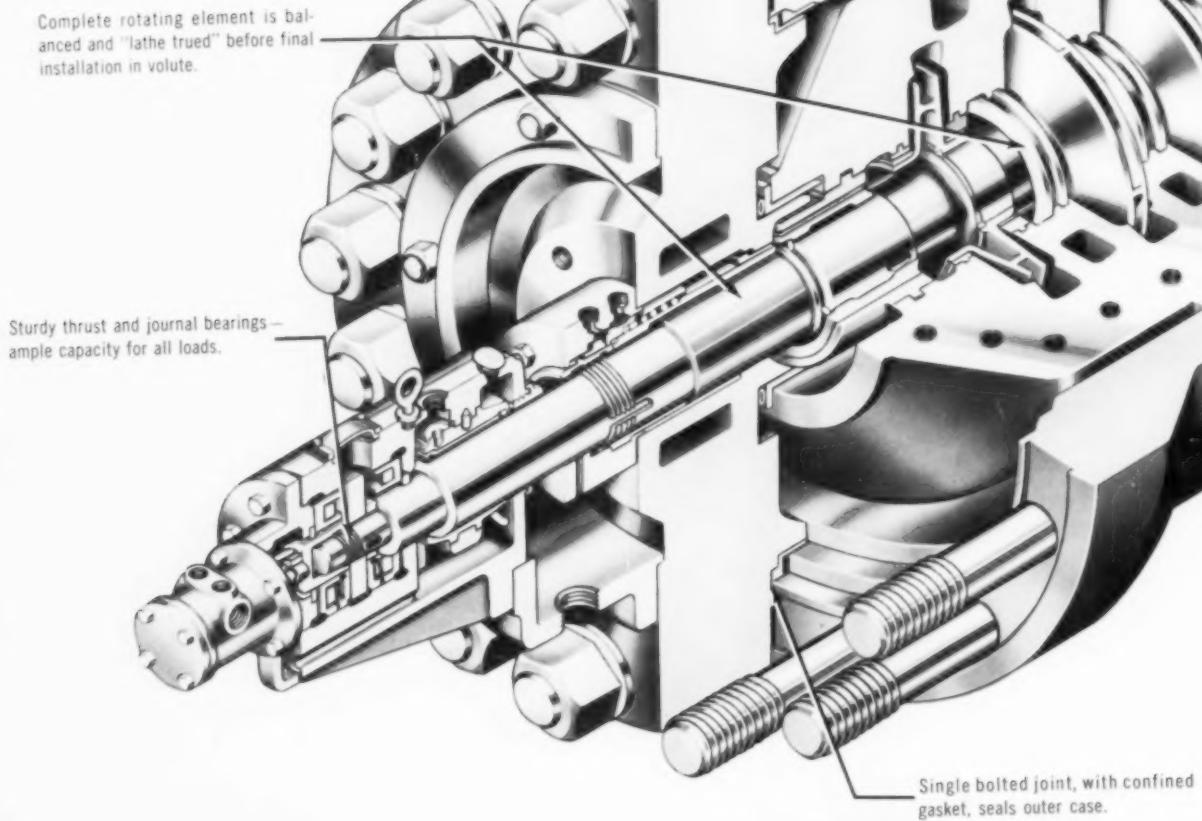


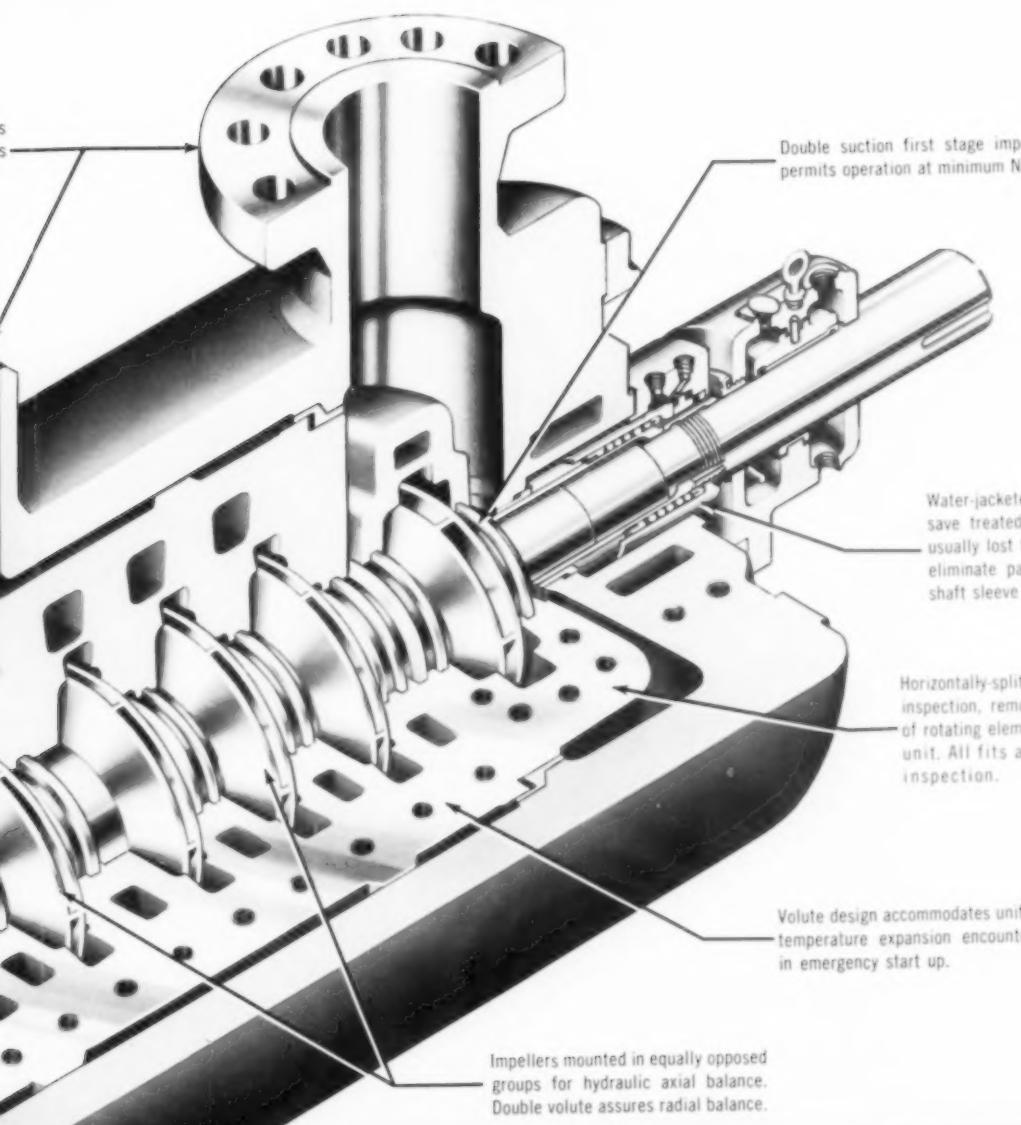
the **BJ** Double-Case Boiler Feed design

Several distinct advantages are inherent in the BJ Double Case design. Complete radial and axial balance is built-in and maintained regardless of wear or changes in load. The horizontally-split inner case permits inspection or replacement of the completely assembled rotating element. All bores and inner case fits are machined in a single casting which maintains alignment of case wearing parts and ring fits. The completely symmetrical inner case eliminates case distortion due to temperature change.

All of these points contribute to BJ's enviable record of long life, reliability and ease of maintenance.

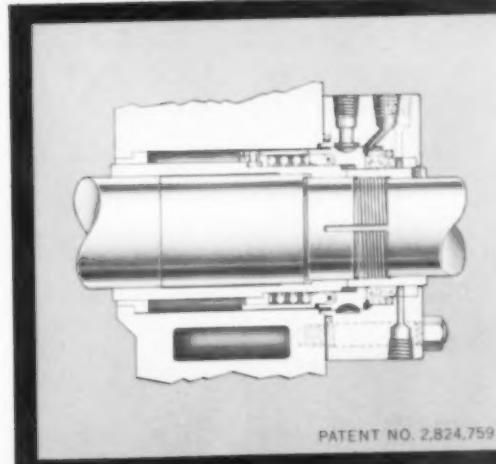
Suction and discharge nozzles are available to customer's specifications.



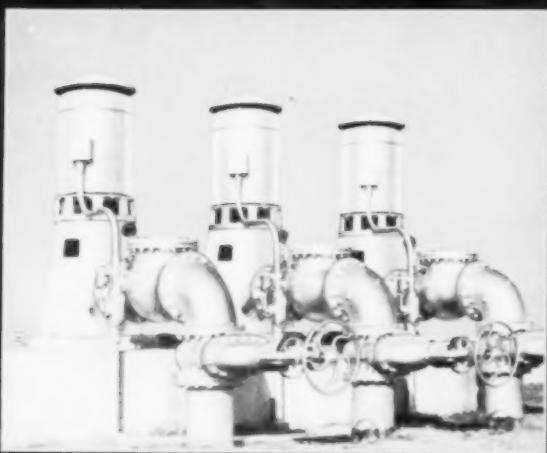
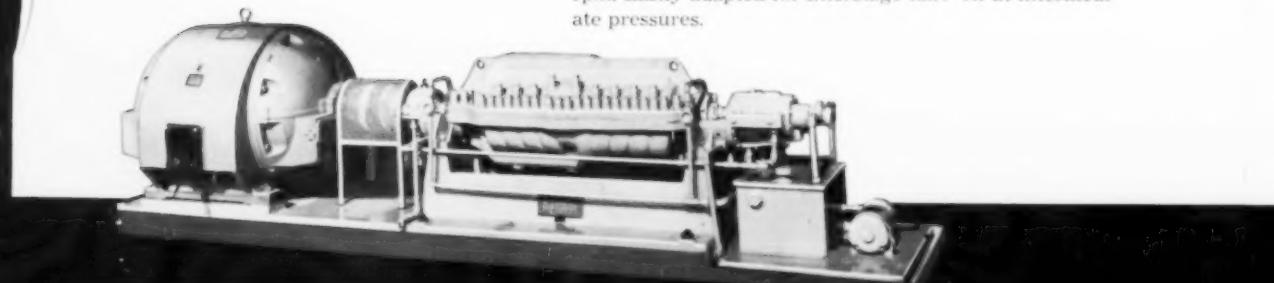


BJ MECHANICAL SEALS FOR POWER PLANT SERVICE

Especially designed for sealing against the high pressures and temperatures of power plant service, BJ Mechanical Seals are recommended for all pumps. On the type D Seal shown here, the rotating face incorporates a pumping ring for circulating cooled liquid to the seal faces. In addition, water jacketing is provided to prevent temperature damage while unit is on standby.



DVMX PUMPS—A proven, split-case boiler feed pump with double row bolting to prevent interstage leakage or bowing at parting flanges. Compact, symmetrical design allows safe operation to 500° F... hydraulic pressures to 4000 psi... metallurgy and construction permits speeds to 7000 rpm. Easily adapted for interstage take-off at intermediate pressures.



VERTICAL CIRCULATING PUMPS

For continuous operation at high efficiencies, these standard circulating pumps draw from a sump and require little floor space. Available in single or multi-stage units with a wide choice of discharge column and mounting arrangements. Capacities are to 24,000 gpm with heads to 500 feet, and up to 45,000 gpm with heads of 250 feet or less.



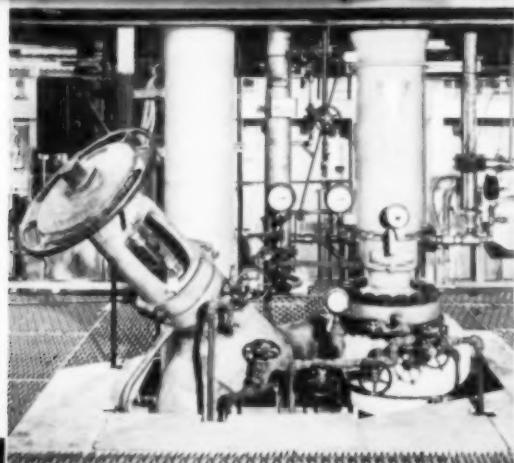
VERTICAL CONDENSATE PUMPS

Ideal for pumping liquids near the boiling point, or for any application where NPSH is limited. This multi-stage, vertical pump is a self-contained unit mounted in a barrel which creates its own suction sump. Requires minimum floor space. Standard models have capacities up to 2000 gpm with heads as required.

SPECIAL POWER PUMP DESIGNS

Always first in the development of improved designs and greater pump efficiency, Byron Jackson can engineer and build special pumps for any requirements. Shown here is a 4 in 1 condensate pump which uses one driver for four pumps. This common shaft arrangement saves floor space and provides added reliability with only one stuffingbox necessary.





BOILER RECIRCULATING PUMP — The BJ Electro-mesible, shown here, operates under full boiler pressures and temperatures to provide efficient circulation for peak boiler performance. Vertical design with a heat barrier and wet-winding motor eliminates the use of a stuffingbox. Suction pressures 2000 psig and above, water temperatures to 658° F. Capacity is 6970 gpm with a 124 foot head and up to 10,000 gpm at reduced head pressures.

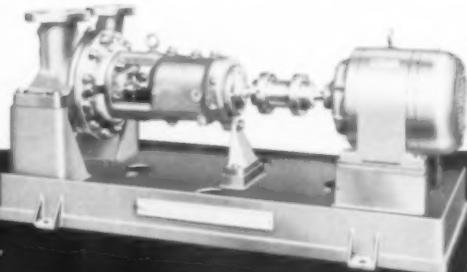


HIGH SPEED RECIRCULATING PUMPS

This combination feed and booster pump is an example of BJ's advanced leadership in pump engineering. Weight, space and NPSH were all critical design factors in this pump which operates at 15,800 rpm.

SM PUMPS

A heavy-duty process type pump for use in condensate and light boiler recirculation duty. Easily dismantled for inspection without disturbing major piping. Single and double stage models available for a wide range of pressures and at temperatures to 800° F. Capacities are to 3800 gpm, heads to 1600 feet.



Whatever your pump requirements for power plant service, Byron Jackson can furnish the best equipment for the job, and is backed by over 86 years experience in design and manufacture of quality pumps. Detailed performance and specification information is available on the pumps shown here from your nearest BJ office.

Since

BJ

1872

BYRON JACKSON PUMPS

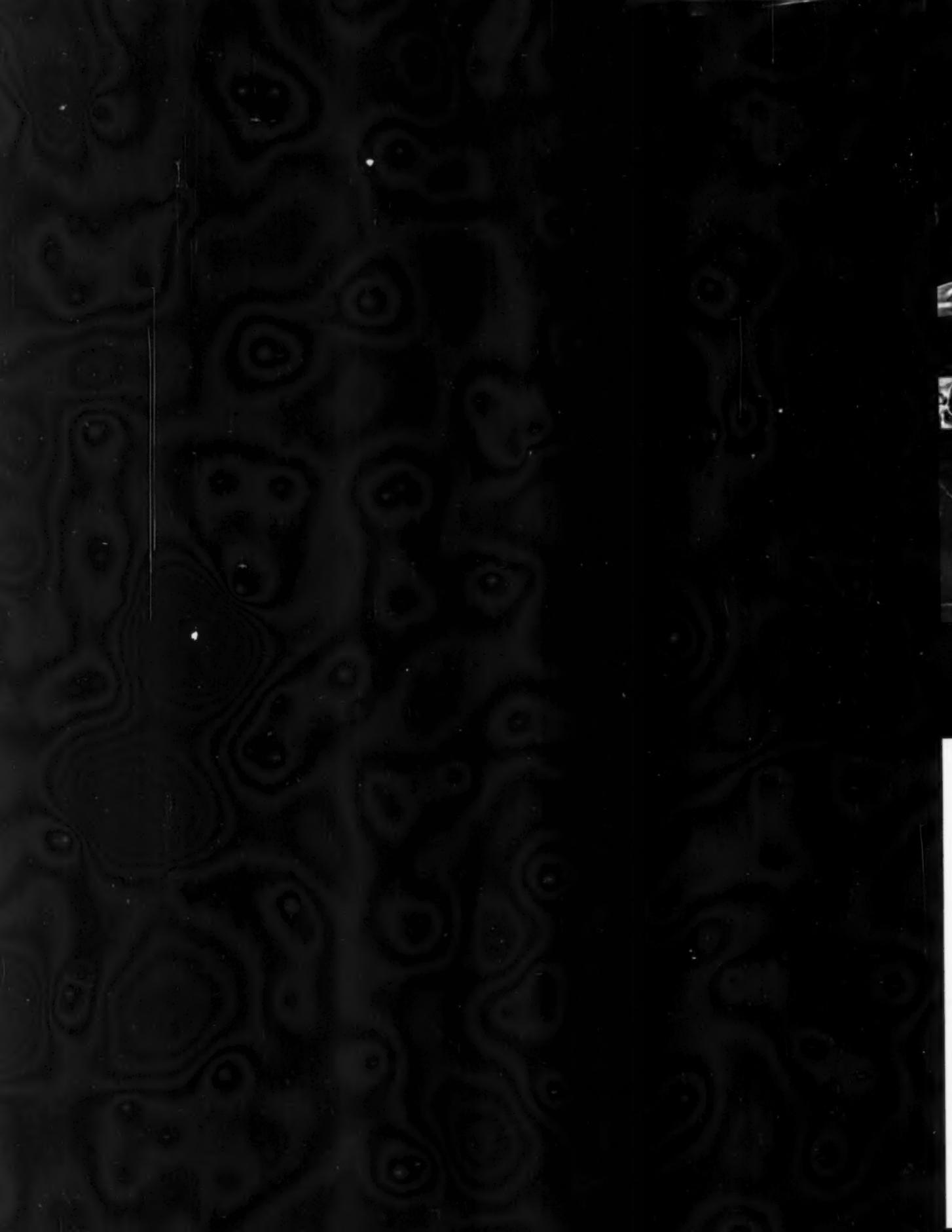
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BJ PUMPS FOR NUCLEAR POWER APPLICATIONS

This giant BJ Liquid Sodium Pump is used for primary cooling in a nuclear fueled power plant. Standing 35 feet and with a 6 foot diameter, it is rated at 1,000 hp and delivers liquid sodium at 1000° F. at 11,800 gpm with a 310 foot head! BJ designs and manufactures all types and sizes of pumps and mechanical seals for nuclear fluids.



LOOK

...If you

LOOK for Top Value



JENKINS FIG. 106-A BRONZE GLOBE 150 LBS. STEAM . . . 300 LBS. O.W.G.

in Disc Equipped Bronze Valves

LOOK at that Wheel — Tough malleable iron. Design unequalled for cool, sure grip.

LOOK at the Index Plate — Has Fig. No. etched in green background. Held by wheel nut which is secured by rolled-over spindle end.

LOOK at that Spindle — Made of high tensile bronze. See how much heavier it is . . . how many more deeply cut threads engage bonnet. And, the crowned head that reduces friction on disc holder. Sure, it costs more to make a spindle this way. But it reduces wear, preserves packing, means easier operation.

LOOK at the Packing Nut and Gland — Note the heavy and deep bronze hex. And, that bronze gland designed to compress packing toward spindle.

LOOK at that Packing Box — Its depth equals 1½ times spindle diameter. More packing

space means less repacking. An asbestos, lubricated and graphited packing is used.

LOOK at that Bonnet — One-piece, screw-over design with big hex surfaces is easy to remove. Take an extra look at the bevel joint between bonnet and body, serving as an internal brace against the crushing effect of the bonnet assembly. Millions of Fig. 106-A in use for years prove this unique design licks distortion and springing.

LOOK at the Disc Holder — It's the Slip-on Stay-on type originated by Jenkins. Correct protective depth prevents flaking or cracking of disc.

LOOK at the Disc — Easily renewed without removing valve from line. Made of compositions to suit various services . . . and made by Jenkins, the only maker of both valves and discs.

LOOK at that Body — Just compare wall thickness of this high tensile bronze body with any other valve. The factor of safety is many times higher than rating requires. See the curved diaphragm to protect seat from distortion by pipe strain. Note that the raised seat is higher to permit more reseating operations . . . and wider, so it won't cut into disc. Pipe threads are full length and clean cut.

LOOK at this . . . for Throttling

—Just replace the standard disc nut with this Throttling Nut and a Fig. 106-A becomes well-suited to throttling service. This unique nut reduces the effects of wire drawing and its long legs restrict flow for accurate control. Many plants take advantage of this versatile valve to reduce valve and parts inventory.



THE FIRST renewable composition disc valve was a Jenkins Valve, originated nearly a century ago. Compare today's Fig. 106-A Bronze Globe with any other. See why so many valve users agree that a Jenkins is still the **FIRST** for top value. For descriptive folder No. 189-B on the full line of Jenkins Bronze Globe, Angle and Check Valves write to Jenkins Bros., 100 Park Avenue, New York 17.

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JENKINS

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VALVES





Twin-shell, triple-lane, single-pass Condenser with 187,000 sq. ft. capacity. One of largest units ever built, it was recently installed at large eastern utility.

In tube layout, too... design makes the difference with C. H. Wheeler condensers

You see here one of the many reasons why C. H. Wheeler Dual Bank Surface Condensers operate so efficiently in scores of public utilities and industrial plants throughout the country.

Triple Lane Tube Layout, with three separate pathways for steam travel, allows the steam to penetrate to the peripheries of all tubes.*

Design like this, typical of C. H. Wheeler engineering, steps up condenser efficiency. Other engineering advancements—such as patented Reverse Flow, which permits flushing away leaves,

twigs, algae and other foreign matter—reduce maintenance requirements. "Zero" condensate temperature depression, pure condensate and deaeration to 0.03 cc. of oxygen per liter (special design provides for deaeration to 0.01 cc. of oxygen per liter) . . . are

additional features you get with C. H. Wheeler Condensers.

*Location of the air-vapor take-off reduces the resistance to steam passage. This minimizes the depth of steam penetration through the tube bank of all C. H. Wheeler Condensers.

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